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PHARMACEUTICAL NOTES.

BY FERDINAND F. MAYER.

*Japanese Lovage-Root.*—A year or two ago the New York College received from one of its members a specimen of a so-called lovage-root, reputed to be of Japanese origin. A large quantity of this drug had been brought here from San Francisco, where it had been received as a shipment from Japan. No more information could be obtained of the dealers in regard to its origin; the house who purchased it, however, found considerable difficulty in disposing of the article, as a substitute for the ordinary lovage-root, and the greater part of it still remains unsold.

Lovage is employed to a considerable extent in the form of candy, or the root itself is chewed, principally for its aromatic properties, and also for its diuretic and emmenagogue virtues, especially by our colored population. Besides, the German apothecaries have occasional calls for it, as it preserves among their customers its ancient reputation for like purposes.

There are ordinarily to be found in the market the common *Radix Levistici* from *Levisticum officinale*, Koch (*DeC. Prod.*, iv. p. 164. Hayne, *Arzneigewächse*, vii. t. 6. Woodville, *Med. Botany*, i. p. 141, t. 55,) which is imported, and an American root which, I have been informed by the dealer, is the same species cultivated in this country. In its general properties and anatomical structure this American root appears to be identical with the foreign; both are cut into longitudinal slices, have the same sponginess, caused by the empty vessels of the bark, and

the opopanax-like odor. But while the main root of the imported kind is covered with horizontal wrinkles, the American shows none but longitudinal striæ; and it will require some more and very substantial evidence to allow us to admit that this difference was solely the result of acclimatisation.

With neither of these roots, however, has the Japanese drug any resemblance, being neither of a spongy consistence, nor of the odor or taste of *Levisticum*; and in absence of any clue to the origin of the plant or the name which it bears in Japan, I have at different times thought it not unlikely that the roots might be those of an *Imperatoria*, or of *Angelica sylvestris*, L. (Hayne, *l. c. t.* 9. Woodville, *Med. Bot.*, i. p. 89, t. 36,) of *Archangelica decurrens*, (Ledebour, *Flora altaica*, i. p. 316, *Icones*, tab. 166,) or of *A. peregrina*, Nuttall, (Torrey and Gray, *Fl. N. Am.*, p. 622, = *A. Gmelini*, DeC. Prof. A. Gray, *Mem. Am. Acad.*, new ser., vi. 377,) as being nearly related to *Levisticum*, and all of them plants of North America or Northern Asia. Yet, on examination, neither these nor the *Umbelliferae* mentioned by Kaempfer, Thunberg, v. Sieboldt,\* Hoffman and Schultes,† or by Prof. Asa Gray,‡ and in Walper's *Repertorium* and the *Annales Botanices*, gave indications which could be called satisfactory. Black's *Catalogue of Japanese Plants*, an appendix to Hodgson's *Japan*, I have been unable to procure.

A better promise offered a notice of what I must presume are these identical roots in Mr. Hanbury's *Notes on Chinese Materia Medica*,§ where they are described under the names of *Yu-shuh* and *Chuen-Keung*, our drug appearing to be a mixture of both, supposing there be a difference between them. The description there given concurs so closely with the appearance of our own specimen, that it may serve our purpose here:

1. "*Yu-shuh*, root of a plant of the nat. ord. *Umbelliferae*? Contorted fleshy roots, anteriorly about  $\frac{3}{8}$  of an inch thick, but lower down swelled into nodular tubers an inch or two in diameter,

\* *Verhandelingen Batav. Genootschap*, vol. vii. (1830). *Abhandl. Math. Phys. K. Ber. Ak.* iv. 134, (1846.)

† Index in *Journal Asiatique* of 1852.

‡ *Perry's Expedition*, vol. ii. 312. *Mem. Amer. Acad.* new series, vol. vi. 377.

§ *Pharm. Journ. Trans.* (2) iii. pp. 315, 316.

covered every where with a wrinkled, brown skin ; internally they are of a pale rusty color, [moist\* and] easily cut, and have an aromatic odor and sweetish aromatic taste.

2. "*Chuen-Keung* ; referred to as '*Czuan-siun*, *Rad. Levistici*?' in Tatarinow, *Catal. Med. Sinens.*, p. 15.

Nodular masses consisting apparently of the rootstock of some umbelliferous plant allied to *Angelica*. The specimens are from  $1\frac{1}{4}$  to  $2\frac{1}{2}$  inches in diameter, having a very irregular, rough brown, outer surface, and a pale yellowish brown, cavernous interior.† The odor of the drug resembles that of the root *Tang-Kwei*, (from *Aralia edulis*, Sieb. et Zuccarini, *A. cordata*, Thunb., *Dimorphanthus edulis*, Miquel, *Doku-quatz*, vulgo *Dosjen* by Kaempfer,) resembling that of *Angelica* and *Celery*."

Mr. Hanbury adds that a decoction of the roots described is taken by the Chinese women for some time previous to child-birth, it being reputed to alleviate its dangers.

This reference, together with a noticeable difference between the structure of these roots and that of umbelliferous roots generally, viz : the absence of rays in the cortical portion, which appears to be quite characteristic for several of our *Araliæ*, as those of *A. nudicaulis*, *A. hispida*, *A. quinquefolia*, and the shortened branches of the rhizoma of *A. racemosa* ([*Araliæ eduli*] *affinitate proxima* [Endlicher, *Enchiridion*, p. 394]) led me to search for a probable source of the root among the plants of the family of *Arabiaceæ*, and without being at all sanguine in regard to it, I would make a suggestion, which I hope may be further examined into by a botanist.

Under the names of *Scutellaria prima*, *S. secunda* and *S. tertia*, Rumpf (*Herb. Amboinense*, vol. iv.) describes resp. *Aralia cochleata* (*Panax cochleatum*, DeC. Prod., iv. 263,) *A. pinnata* (*P. pinatum*,) and *Aralia fruticosa* (*P. fruticosum*, Linn., Sp. Pl., 1513, DeC., Prod., iv. 254); of the latter plant a drawing is contained in *Andrews' Repository*, ix. pl. 595, from a living specimen cultivated in England.

The following is the quotation from Rumpf's description of

\* (Not in our specimen.)

† [A number of them arranged on a string passed through narrow holes.]

*Scutellaria tertia*, alluded to as probably applying to our specimen :

"Totius fructus sapor multo penetrantior est quam in ullis prioribus speciebus (viz : *A. cochleata*, *A. pinnata*,) magisque ad illum Petroselinum adcedens, ita ut *Apium fruticans* posset haberi. Sapor autem gratissimus in ejus radicis detegitur, quæ maxime etiam in usum vocatur. . . . . Hæc planta non tantum hortorum ornamento inservit, sed præcipue in re medica adhibetur, atque ab incolis tanquam *Petroselinum* seu *Apium* in usum vocatur; ejusque folia ac radix virtutem habent diureticam, multo efficaciorẽ binis præcedentibus speciebus; simulque vel hæc sola aquæ incoquitur et propinatur in nephritide contra mictus dolorificos uti contra dysuriam, mictus cruentos, et gonorrhœam. . . . . Simplex foliorum decoctum sapius propinatum fuit in nosocomio hominibus nephritide laborantibus, quibus urinam vehementer expellabat. Decoctum istud tam radicis quam foliorum a mulieribus etiam adhibetur ad menstrua provocanda."

The last sentence certainly is not so much in support of my suggestion, nor do the names given by Rumpf convey a more definite information. But otherwise the descriptions agree, and the plant is universally cultivated at least in Amboyna, Java and China.

One of the roots described by Thunberg is the *Radix Ninsi* from *Sium Sisarum* var. *Ninsi* (DeC. *Prod.*, iv. 124. Thunberg, *Flora Japan*, p. 118. Kaempfer, *Amœn*, p. 818. Linn., *Icon. Plant. Med.*, 505. *Berle de Chine*, Lamarck *Diet.* Th. F. L. Nees von Es. *Plant. off.* 284,) which in his time was imported from China into Japan, where it was used as a cordial and sold at the rate of 600 Thalers the pound. I mention this here because in Pereira's *Elements of Materia Medica*, Amer. edition, ii. Rad. Ninsi is given as one of the synonyms of Ginseng, the Japanese names of which, there being two varieties, are *Tjozen-ninsin* and *Josino-ninsin*.

*Jacca-nuts*, from *Artocarpus integrifolia*, L.—Under the name of *Paradise-nuts* I have lately met with these at several fruit stores. They appeared to be altogether new to the several dealers, none of them being acquainted with the proper name, nor could the broker who sold them give any clue as to their origin, or had invented the name under which they were sold as not affording much information. From the fact, however, that the jacca or jack tree, together with other varieties of the bread-fruit proper, is cultivated in the West Indies, I conclude that they were imported from one of the islands, though it is also within



the reach of probability that they may have been carried here from the native countries of this species in the Pacific or Indian Oceans.

The Jacca\* is a large tree attaining a height of 30 to 50 feet, and in its general character concurs with that of the true bread-fruit tree, (*Artocarpus incisa*, L.)

The fruit of this species, as well as of *A. incisa*, is the compound inflorescence of the pistillate flowers ripened into a syncarpium or compound berry. It is composed of numerous carpels, which are united at the base to the common fleshy receptacle forming the axis of the syncarpium, while their apices are connected and form the rough green rind or outer covering of the fruit; the rough points on the outside of the fruit of *A. incisa* being pyramidal or conical, while they are pentagonal or hexagonal in *A. integrifolia*. The shape of the latter fruit is ovate-cordate; it is from 12 to 30 inches long, by from 6 to 12 in diameter, and weighs from 10 to 90 pounds. As is the case with the bread-fruit proper, by far the larger number of ovaries prove abortive, and their perianths are gradually converted into a yellowish gelatinous pulp, which is the principally edible portion, and which is eaten in the same manner as the pulp of the other species, though its odor is stated to be repulsive. The sterile carpels become compressed into fleshy ligulæ, which surround the fertile ones. The latter, the fruits proper, are the nuts before us.

The pericarp is of the shape of a dried prune, but from two to four times its size, with a long *f* for its axis, somewhat triangu-

[\**Artocarpus integrifolia*, L. Sex. Syst. *Monœcia Triandria*. Nat. Family. URTICACEÆ Jussieu. Ord. ARTOCARPEÆ Ad. Brogniart. Tribe. *Euartocarpæ*. Subgenus, *Jaca* Trécul.—Linn. *Syst. Veget.* 838. Sprengel, iii. 804. Trécul, *Ann. Scienc. Nat.* 3me. S. t. viii. 109. Zollinger, *Flora*, 1847, p. 471.

*Tsyaka maram* s. *Jaca* s. *Jaaca*, Rheede, *Hort. Malab.*, iii. tab. 26-28. *Soccus arboreus* s. *Nanka*, Rumphius, *Herb. Amboin.* i. tab. 30-31. ?*Polyphema Jaca* Lour-iro, *Flor. Cochinch.* p. 546 [= *Artocarpus polyphema*, Pers. Trécul, l. c.] *Rademachia integra* Thunb. *Stodium cauliflorum* Banks. Gærtner, *De Fruct.* i. 344, tab. 71, 72. *Artocarpus Jaca*, Jaquier des Indes, Lamarck. *Diet.* iii. 209. Hooker, *Curt. Bot. Mag.* liv. 2833. Roxborough, *Pl. Corom. Coast*, 250. De Tussac, *Flore des Antilles*, ii. 4. Descourtilz, *Flore p. et méd. des Antilles*, t. viii. Lunan, *Hort. Jamaic.*, p. 388. Maycock, *Flor. Barbad.*, p. 346.]

lar or gibbous on one side; they are of a pale or reddish brown color without, with irregular furrows running not quite the whole distance from the scar to the apex, bony; within rusty and rather spongy, and marked with greyish, flattened vessels. A thin, pale brown arillus adheres more often to the shell than to the seed. The latter is smooth, kidney- or almond-shaped, covered with a fawn-colored skin, and consists solely of the embryo; in appearance and taste it resembles that of the Brazil nut (*Bertholletia*.)

They are used by the inhabitants of the places where the tree grows or is cultivated, either raw, or roasted like chestnuts. Those of the fertile variety of *A. incisa* are the *Malabar chestnuts*, which are of a different appearance. Descourtiz states that in Jamaica the nuts of both species are used indiscriminately; those of the *Jacca*, however, are preferred as a substitute for almonds in medicinal preparations, especially for *Syrupus Emulsivus*; prepared, as required by the Pharmacopœia, with an emulsion of these seeds in place of almonds, it is said to be unchangeable, quite a desideratum in such a climate. He also mentions that the exportation of shoots or seeds from Jamaica, where it was introduced in 1782 by Lord Rodney, was prohibited. It is not likely that the tree can be raised from the seeds, since Tussac mentions that they lose their vitality within a few weeks after being taken out of the fruit.

*Souari-nuts*, from *Caryocar tomentosum*, L.\*—The genus *Caryocar*, which, with the exception of one species established by Bentham, constitutes the order of *Rhizoboleæ*, comprises a number of South American nut-bearing trees known under the name of *Pekea*, *Peki*, *Souari*, *Souwarow*, etc.; the nut is also described by older writers as *Castanea Peruviana*, *Amygdala Guianensis*, *Amygdalus granatensis*.

The nut which is at present to be found in the fruit stores is, properly speaking, the *Tata-youba*, under which name the tree was

[\* Sex. Syst. *Polyandria tetragynia*. Nat. Ord. *Rhizoboleæ*. Subgenus *Pekea*. Willdenow, *Spec. Pl.* ii. p. 1244. Dec. *Prod.*, i. 600. *Tata-youba* s. *Pekea tuberculosa*, Aublet, *Guian.*, i. p. 597, t. 239. Lamarck, *Dict.*, iii. 33, *Encycl.*, tab. 489, 2, *Rhizobolus Pekea*, Gaertner, *De Fruct.*, ii. 93, t. 98.]

known in Guiana at the time of Aublet. It differs from the true Souari nut by the tubercular appearance of the shell, besides other differences in the outer coverings of the fresh fruit.\*

The nut sells at too high a rate to be serviceable for ordinary purposes; besides the kernel, which, when sound is very sweet, is frequently destroyed.

*Litchi*, or *Ly-chee fruits*, from *Euphoria Litchi*, Desf.†—These handsome little nut-like fruits are seen here but rarely. Some dry specimens before us are of the shape and size of a large strawberry, somewhat compressed. They are an inflated, dry berry, with a brownish fragile shell studded over with small pyramidal, convex, or flattened tubercles; within there is a single hard, brown, tooth-like seed adnate to the base, and covered with a shrivelled pulp of the consistence and appearance of a large raisin. The latter is the edible portion, and possesses the taste of preserved quinces.

It is consumed to a considerable extent in China, etc., and

\* The other species of the subgenus *Pekea* with an edible nut is *C. butyrosom* (Willd., *Sp. Pl.*, ii. 1243. DeC. *Prod.*, i. 600. *Pekea butyrosa*, Aublet, *Guian.*, i. 594, t. 238. Lamarck, *Encycl.*, iii. 33, tab. 486, 1.

Of the subgenus *Souari* the nuts occur under the same names from *C. nuciferum* (Willd., *Sp. Pl.*, ii. 1243. DeC. *Prod.*, i. 299. Hooker, *Curt. Bot. Mag.* liv. 2727. *Flore des Serres*, iii. 183, 184.

*C. glabrum*, Pers. (DeC. l. c. *Saouri glabra*, Aublet, *Guian.*, i. 599, tab. 240. *Rhizobolus Saouvari*, Corréa, *Ann. Mus. Hist. Nat.*, viii. 394, tab. 5, 2.

*C. brasiliense*, Cambess. (St. Hilaire, *Fl. Bras. Merid.*, i. 249, tab. 67,) and besides the remaining species described in the *Prodromus*, two new ones, viz:

*C. edule* Casaretto, *Decada Nov. Stirp. Brasil.*, viii. 67. Walpers, *Rep. Bot.*, v. 358; near Rio Janeiro, and

*C. barbierae*, Miq. (*Linnaea*, xxii. 802. In Bresil, Prov. Bahia.)

† Syn. *Dimocarpus Lichi*, Lour. *Scytalia chinensis*, Gaertner. *Scytalia Loacan*, Roxb. *Euphoria punicea*, Lamarck. *Sapindus edulis*, Aitk. *Nephelium Litchi*, Don.

Sex. Tyst. *Monæcia pentandria*. Nat. Ord. *Sapindaceæ*.

Linn., *gen.* 1425. Dec., *Prodr.* i. 611. G. Don., *Gardn. Dict.* i. 670. Lamarck, *Dict.* iii. 573, tab. 306. Aitken, *Hort. Kew.*, ed. i. vol. ii. 36. Gaertner, *De Fruct.* t. 42. Roxborough, *Hort. Beng.* p. 28. Louveiro, *Fl. Cochinch.* p. 233.

Du Halde, *Hist. Chin.* ii. 144. Sonnerat, *It. Ind.* ii. 230. Rees' *Cyclop.* xxxiii. (*Scytalia*.)

also, I believe, to some extent, in the West Indies. The fresh fruit may be a more grateful article than in its dried state. It is used also to prepare cooling drinks in febrile and bilious affections.

*New York, June, 1864.*

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ON CRYSTALLINE DEPOSITS IN EXTRACTS FROM  
ACONITE AND VERATRUM VIRIDE.

BY GUSTAVUS KREHBIEL.

Among several preparations from different kinds of aconite root which I have been making for the use of my esteemed teacher, Prof. F. F. Mayer, in his examination of the active principles, was a fluid extract of an English aconite root of very superior quality.

The tubers were uniformly of a pale brown color within, and apparently unmixed with that of any other variety but that of *Aconitum napellus*. The fluid extract, by a misapprehension, was prepared with alcohol somewhat stronger than the officinal, and, on being allowed to stand for some days, it deposited a large number of well developed crystals on the sides and bottom of the vessel. To these Prof. Mayer called my attention, stating that the formation of crystals, especially those of some sugar, had been lately observed by Prof. Schroff of Vienna in several narcotic extracts, as those of helleborus and various species of aconitum; and under the impression those found by Prof. Schroff had been recognized by the same as glucose, the appearance of the crystals and an examination with Fehling's solution led him to assume that they were pure cane-sugar; while the fluid extract itself at once gave the reaction with the copper solution.

Some time after, I had occasion to prepare a concentrated tincture of *Veratrum viride*, in which I employed whole roots of the best quality, using alcohol of 86 per cent. Richter; and, shortly after finishing the preparation, there appeared in the bottle a deposit of smaller crystals, but of the same kind as those observed in the concentrated tincture of *Aconitum napellus*.

On communicating these facts to Prof. Mayer, he showed me

a paper of Prof. Schroff in *Zeitung des Nord Deutschen Apothekervereins*, of August 18th, 1863, where precisely the same circumstance was noticed, and at his request I undertook the examination of both deposits. They were thoroughly washed with ether-alcohol. The crystals deposited from four fluidounces of the fluid extract of aconite (equal to four troy ounces of the tubers) amounted to about forty grains. They retained a brownish color, as I did not discolorize them with charcoal, to avoid a loss; they had the crystalline structure and the strongly sweet taste of rock candy, and gave no reaction with Fehling's solution, but, after being treated with a little diluted sulphuric acid, they at once deposited suboxyd of copper.

On incinerating the crystals in a platinum crucible there remained behind a noticeable quantity of a white ash, which proved to be *lime*.

The watery solution of the crystals, slightly acidulated with dilute nitric acid, on the addition of acetate of lead gave a very faint indication of a precipitate too small for examination. The latter reaction may be ascribed to the presence of coloring matter and not to aconitic acid.

The crystals recovered from the concentrated tincture of *Veratrum viride* (of which four fluidounces also correspond with four troy ounces of the root) amounted to about the same quantity as those of the tincture of aconite; they were colorless, but presented the same appearance and taste; they gave the same reaction with the solution of copper, and on calcination likewise gave a pure white ash consisting of *lime*. The watery solution of the crystals, when acted upon by acetate of lead, also showed an indication of a precipitate.

The deposits formed in this manner may therefore be assumed to be crystallized *cane-sugar*, with probably a small quantity of a compound of *sugar with lime*, which is of difficult solubility in alcohol.

The concentrated tincture of *Veratrum viride*, freed from alcohol, also reduced the copper solution without previous treatment with acid.

By the advice of Prof. Mayer I also examined some finely-

developed crystals of rock candy, which gave precisely the same reactions and left the same white ash, which also proved to be lime; but on adding acetate of lead to a slightly acidulated aqueous solution of the crystals, I could not perceive any precipitate.

In the mean time I have had an opportunity of examining the paper of Prof. Schroff in the *Prager Vierteljahresschrift fuer die Practische Heilkunde*, 1854, 2er band, p. 129, and also his later treatise in *Schmidt's Jahrbuecher* about the varieties of aconitum.

The alcoholic extracts in which he notices the appearance of sugar, are of *Aconitum lycoctonum* (L.), *A. anthora* (L.) and *A. neomontanum* (Wulfen). Especially the alcoholic extracts of the roots collected in the fall yielded more sugar than the roots collected in the months of June or July, but the latter proved to be more active.

New York, June 7, 1864.

#### REMARKS ON SOME PREPARATIONS OF THE U. S. PHARMACOPŒIA, 1860.

BY WILLIAM PROCTER, JR.

(Continued from page 209.)

*Acetum Scillae.* In remarking on preparations of this class in a previous paper, the practical error which crept into the formula for this preparation was passed accidentally unnoticed. The glutinous character of squill develops, even in a coarse powder, so much adhesiveness in the particles as to render the directions of the Pharmacopœia almost impracticable. It is better, therefore, to mix the squill with a pint of dilute acetic acid, as directed in the second formula of the Pharmacopœia of 1850, and, when the particles are thoroughly swollen by maceration, to put the magma into a glass conical percolator, settle it down by agitation and slight pressure, and pour on dilute acetic acid until two pints of vinegar of squill have passed.

*Aconitia.* The process for *Aconitia* is a modification of that of Headland, noticed in the Dispensatory, but differing from it by the precaution taken to remove the fixed oil and



resin, by a preliminary washing by means of ether, after the aconitia has been sulphated, and before the addition of the ammonia. As this modern aconitia is not pure, it retains coloring matter, and, according to the recent discovery of the Messrs. Smith, of Edinburgh, another alkaloid, which they call aconella, and which they and subsequent experimenters believe to be identical with narcotina. The inertness of narcotina must materially diminish the power of aconitia, and the variable strength of the alkaloid of commerce may be partially due to this cause.

*Æther.*—In this formula, more alcohol is etherified by a given proportion of sulphuric acid, and the process is rendered definite and certain by directing the range of temperature at which it should be conducted, and, without attention to which, a much more alcoholic product may be obtained than is sought.

*Æther Fortior.*—In the Pharmacopœia of 1860 this is a new preparation, being ether of sp. gr. .728, in which the ordinary ether is deprived of alcohol and water by agitation with chloride of calcium and quick lime in powder and subsequent distillation. In Dr. Squibb's apparatus for making ether, the product is obtained directly of the required sp. gravity, by passing the ether vapor through a series of condensers and washing arrangements, whereby the impurities are separated before it reaches the final refrigerating condenser. This ether is directed in the Pharmacopœia in the processes for aconitia, oil of wine, oleoresin of ginger, and for use in inhalation.

*Chloroformum Purificatum.*—Owing to the frequent impurity in commercial chloroform, the revisors of the Pharmacopœia deemed it safer to have a special name that should signify a pure preparation for inhalation. Hence the apothecary should know, when this chloroform is ordered, that it is intended for that use.

*Oleum Ethereum.*—It should be remembered that ethereal oil is now a mixture of equal parts of ethereal oil and stronger ether, and, instead of being heavier than water, is of sp. gr. .910. The addition of the ether is to give chemical permanency to the oil, which, in a pure state, undergoes chemical decompo-

sition and turns black. It is, therefore, necessary to use twice as much of the new preparation in making Hoffman's Anodyne.

*Aloe Purificata.*—This formula is intended to meet a want sometimes occurring with commercial aloes. Yet the Pharmacopœia evidently does not lay great stress upon it, as the resulting preparation is not directed in any of the preparations of aloes.

*Ammonie Valerianas.*—This formula is that suggested by Benjamin J. Crew, (Amer. Journ. Pharm., vol. xxxii., 109), and is the best one yet published. The commercial valerianic acid is not always sufficiently concentrated for use in this formula, it must be monohydric to succeed, and the precautions directed to get the ammoniacal gas dry should not be neglected. The heat generated by the combination of the gas with the acid is sufficient to keep the salt liquid until saturated, when, on cooling, it becomes a loose crystalline mass. It is very desirable that the acid should be completely saturated, that the salt be as free as possible from valerianic odor, the salt possessing much less of this odor than the free acid. The manipulation requisite to produce this salt in the greatest perfection of purity, is only acquired by practice and familiarity with the process.

*Antimonii Oxidum* was formerly only known in the Pharmacopœia in the process for tartar emetic as oxychloride. Now, pure oxide of antimony is made an officinal preparation for use in tartar emetic or other purpose. It is an ingredient in Tyson's Antimonial Powder.

*Antimonii Oxysulphuretum.*—Under this name the Kermes of the Codex is now an officinal of our Pharmacopœia. It is, probably, the most active of the several forms of kermes, and may be made readily, in small quantity, over a gas lamp.

*Antimonium Sulphuretum* is the new name for the precipitated sulphuret of previous editions, and corresponds with the name in the British Pharmacopœia.

*Aqua Ammoniae*, the old name of the 1st edition of our Pharmacopœia, has been re-adopted for liquor ammoniæ, and it is placed among the waters, in obedience to a resolution of the

Committee of Revision to arrange preparations under their several generic heads.

*Aqua Chlorinii.*—This formula is nearly that of the late Dublin Pharmacopœia, both in proportions and manipulation, as found in the Dispensatory.

*Aqua Cinnamomi.*—It should be remembered that the only oil of cinnamon recognized by the U. S. Pharmacopœia is the Ceylon oil, and that this is directed in cinnamon water.

*Argenti nitras.*—This formula is an improvement. The former recipe inferred the use of chemically pure silver. The present formula is so constructed as to rid the salt of all free nitric acid, and in case cupreous silver is used to reject the impurity almost wholly as oxide of copper, if the heat is managed carefully, the cupreous nitrate being decomposed by a temperature at which the nitrate of silver is intact. Nevertheless, the Pharmacopœia process is intended for pure silver, as seen by consulting the test in the list of the *Materia Medica*.

*Atropia.*—This is a new officinal, although in general use before the publication of the Pharmacopœia. The process is nearly that recommended by the author of this paper, in the proceedings of the Amer. Pharm. Assoc. for 1860. The recommendation in that paper to wash the sulphated liquor with chloroform to insure the entire removal of fixed oil and resin before adding the potassa, was not adopted in the Pharmacopœia process. This, in the absence of any subsequent purification, is liable to render the product less pure. The product of the Pharmacopœia process is, therefore, not pure atropia, but that alkaloid with some coloring matter, the removal of which the Committee deemed not of sufficient importance to justify the loss of product which would follow it. The loss of at least the greater part of the chloroform may be avoided by placing the chloroformic solution of atropia in a beaker glass suspended in water, in a small still, and applying a heat sufficient to vaporize the chloroform, which will be recovered by proper refrigeration. The propriety of not further purifying the crystals of atropia may be doubted, as from the direction to evaporate to dryness the exterior portion of the residual crystalline mass is

more or less contaminated with matter held in solution by the chloroform, and which gives it a darker color than the other portion, and, consequently, there is a slight want of uniformity in the product. By recrystallization from a filtered alcoholic solution, a purer product is obtained.

*Sulphate of Atropia* is made by the process of Le Maitre, and is based on the fact that, whilst atropia is soluble in ether, its sulphate is not; and, hence, when the constituents are brought together in that menstruum, the resulting salt separates in a solid semicrystalline form the ether retaining any excess of acid or alkali. The former custom of physicians to prescribe atropia, and direct the apothecary to dissolve it in water by aid of a sufficient quantity of sulphuric acid, in some cases led to the production of an acid solution irritating to the eyes.

*Bismuthi Subcarbonas*.—The manipulation in this process is mainly to free the salt from arsenic. When bismuth contaminated with arsenic is treated by nitric acid, both metals are obtained in solution, the latter, probably, as arsenic acid. The filtered solution, on dilution, is converted into subnitrate, which precipitates, and acid nitrate, which remains in solution, as in the old process. The precipitated subnitrate would be contaminated with arsenic acid as arseniate of bismuth, were it not for the direction to let the solution stand twenty-four hours after diluting it to the point when a further dilution will throw down subnitrate. During this time the arseniate of bismuth falls and is separated by filtering. The addition of the ammonia decomposes the super salt and increases the amount of subnitrate of bismuth obtained. The washed subnitrate is now redissolved in nitric acid, affording a solution of bismuth free from the contaminating metal, which is diluted to the verge of precipitation, and then mixed with the solution of carbonate of soda to produce the subcarbonate of bismuth, which is washed, pressed and dried. In this last operation, it must be remembered, the bismuth solution is added to the carbonate of soda in excess, which further insures the absence of arsenic. Dr. Squibb and Mr. Maisch suggested the improvements in this process.

*Bismuthi Subnitrates*.—In this formula a subcarbonate is formed

with like precautions to avoid arsenic and any traces of arsenic acid which may have remained, become arseniate of soda, and is washed away with the washing water. The final treatment with ammonia is intended to increase the product as in the formula for the subcarbonate.

*Cadmii Sulphas.*—In this process advantage is taken of the superior solvent power of nitric acid in dissolving this metal, when, by means of carbonate of soda, it is obtained in a form easily washed, and very soluble in diluted sulphuric acid.

*Calcis Phosphas Præcipitata*, is one of the new preparations.

*Ceratum Adipis.*—The new name for simple cerate.

*Ceratum Extracti Cantharidis.*—This is the formula of Mr. Wm. R. Warner, (see Amer. Journ. Pharm. vol. xxxii. page 11). Though apparently weaker than the cerate of cantharides, it is, theoretically, about the same strength as the bulk and weight of the cerate is increased merely by the active portion of the extract, removed by the solvent action of the fatty matter.

*Ceratum Sabineæ.*—This preparation is now a cerate of the ethereal extract of cantharides, and it is stronger, as the whole activity of *three* troy ounces of savin are in the weight of 12½ troy ounces of the cerate, whilst, in the old preparation, only two ounces of the powder was contained in fourteen troy ounces of the cerate. It is a much more elegant, though more expensive, preparation.

*Ceratum Saponis.*—This cerate, when well made soap plaster is used, is a more eligible preparation than the old cerate, and very much less trouble to prepare. It differs in containing no acetate of potassa or free subacetate of lead, both of which are contained in the old preparation, if made literally by the recipe.

*Cinchonia Sulphas.*—This is a new officinal. The process is based upon that usually followed by the manufacturers who regain this salt from the mother-waters of the sulphate of quinia process. One motive for its introduction was to induce physicians to employ it as a substitute for quinia as a tonic. There is no doubt that in very many of the cases where quinia is ordered this salt would prove efficient, and physicians would do well, especially in the numerous instances where the necessities of

their patients require economy in expenditure, to employ this agent, which costs only one-fourth the price of the quinia salt.

*Collodium*.—This formula is analogous but different from that of 1850, both in proportion of ingredients and in manipulation. Mialhe's plan of getting the nitric acid by sulphuric acid and nitrate of potassa is still adhered to, yet direction is given as to temperature and time of maceration; the latter increased from four minutes to twenty-four hours. The proportion of ether is *reduced* from forty fluidounces to twenty-one fluidounces, and the quantity of alcohol *increased* from one to six fluidounces; and the ether now used is the stronger. An improvement, originally suggested by the late Wm. W. Livermore, consists in washing the moist cotton with alcohol, to dehydrate it before solution in alcoholic ether. There is also an alternative process by which the collodion may be made from dried gun-cotton. The details of this formula were suggested by Dr. Squibb; the product is much more consistent than the old preparation, and is not filtered unless the cotton contains foreign fibres that contaminate the product, when a coarse cloth should be used.

*Collodium cum Cantharide*.—This is one of the new official preparations, though in use for several years. Originated in St. Petersburg by M. Hisch, its use has gradually spread until it is now recognized in our Pharmacopœia as a means of vesication. The menstruum differs from that in ordinary collodion, first, in containing none, or but little alcohol; and, secondly, in the modification produced by a large quantity of fatty oil extracted by the ether from the cantharides, and which modifies its contractile property. The presence of this oil is undoubtedly important as a menstruum to liquify and render more active the cantharidin present in the coating on the part to which it is applied. In operating on a large scale, some chemists have preferred to exhaust the cantharides with a sufficiency of ether, distill off the ether to semifluid extract and dissolve this in sufficient collodion to make the proper measure of the recipe.

With tight apparatus for percolation, and stronger ether, the directions of the Pharmacopœia are quite sufficient to produce an efficient preparation.



*Confectio Sennæ*.—This is the only formula of its class that has been changed. The new formula, in many respects, is an improvement on the old one. First, in the preliminary preparation of each pulp; and, secondly, in the omission of the liquorice root and boiling of the figs with it in the water, with the residue of the senna and coriander. Now, the pulpaceous ingredients are all treated together at one operation, using as much of each substance as will yield the quantity of pulp required. Then the sugar is added and the whole cooked until reduced to a definite quantity, which is intended to be that which on the addition of the senna and coriander will give the proper consistence without further evaporation. It will be found that an advantage will arise, as regards the keeping of the confection, if the senna and coriander powders are added whilst the syrupy pulp is quite hot, which renders the confection less likely to mould—the heat coagulating or cooking the albumen in these drugs. If correctly made the preparation should be smooth, aromatic and not unpleasant to the taste. It will be observed that the formula calls for the senna and coriander in fine powder. The finer these are obtained the smoother will the confection be, unless it be contaminated with particles of the capsules of the purging cassia, which sometimes occurs from the careless preparation of the pulps.

*Decocta*.—No additions or removals have been made in this class. The only changes relate to the manipulation, which results in obtaining always a given quantity of the decoction by percolating the dregs with water on the strainer. In some few instances, like *Decoctum Cetrariæ*, *Cinchonæ*, etc., it is preferable to percolate with boiling water, because of the precipitating influence of cold on these decoctions.

*Emplastrum Antimonii*.—Heretofore in making tartar emetic plasters it has been most usual to sprinkle the salt on the surface of the recently spread but yet warm plaster. In the new preparation one-fourth of the gross weight of the plaster is tartar emetic. Of the general mass of the salt contained in the plaster, but a small portion is active, owing to the particles being

enclosed in the sheathing of resin and being insoluble in it, it is only the exterior layer that acts by contact.

*Emplastrum Arnicæ*.—Alcoholic extract of arnica incorporates easily and completely with resin plaster, and forms a compound adherent and efficient as a strengthening plaster. The plaster in this form was originally suggested by the author of this paper in this Journal for September, 1855, (vol. 3d, 514, 3d series), but the strength as there recommended was quite different, the extract obtained from twelve troy ounces of arnica flowers was incorporated with twenty-two troy ounces of resin plaster. Now, arnica flowers, with the menstruum there recommended, (alcohol 36° B. three parts, water one part,) yield 33 per cent. of soft extract, consequently, in the original recipe, the plaster consisted of four parts of extract to twenty-two parts of resin plaster. One part of the officinal plaster therefore represents one part of the flowers, and is a rather expensive preparation, taken in connection with the cost of the waste of alcohol, etc.

*Emplastrum Opii*.—This preparation differs from the old one in being made with the aqueous extract of opium,—a quantity equivalent to the opium of the old recipe. When an extract is made with water and alcohol so as to get all the soluble matter, the resulting plaster fully represents the drug and has its odor, whilst it is perfectly free from particles of opium not unusually observed in the plaster of the old recipe.

*Emplastrum Picis Canadensis* is a new officinal, being a mixture of one part of wax and twelve parts of Canada pitch, strained.

*Emplastrum Picis cum Cantharide* has been reduced in strength from the proportion of one part of cerate to seven of Burgundy pitch to that of one part to twelve of pitch. This change was made in view of the frequent excessive action of the old plaster, which had often to be reduced in strength.

The subjects of extracts and fluid extracts come next in order and will be remarked on in the next number.

(To be continued.)

## ACTION OF IODINE, BROMINE AND CHLORINE UPON SUGAR.

Translated and communicated for this Journal by the author.\*

I do not know of any work upon chemistry,† or of any chemist, having described the action of iodine upon sugar; yet the changes which take place between these two bodies deserve being studied by scientific men.

I have only to report a series of facts, the result of my experiments since 1856, in the preparation of the syrup of the iodide of iron, which led me to study the action of iodine, bromine, &c., upon sugar.

I have observed the two following facts :

1st. The partial spontaneous decomposition of the syrup of iodide of iron by exposure to the air, is arrested at a certain point, and does not go further, even if exposed for several months, in a capsule only covered with paper.

2d. This syrup, lightly decomposed, or even colored by the addition of a small quantity of iodine, becomes perfectly white after a long exposure to the sun's rays or to a moderate heat; replaced in the dark, it resumes its amber color.

However, two vials hermetically sealed, each containing the syrup of iodide of iron, one colored by natural decomposition, the other by the addition of a small quantity of iodine, were exposed for a year to the sun's rays, then both syrups were colorless; and they remained so for more than a year, though they were left in a dark cellar, and in half-filled bottles.

The first fact reverses the old theory of the decomposition of the syrup of iodide of iron, which was explained by the formation of a protoxide of iron and iodohydric acid, by means of the decomposition of the water into its two elements, and by the transformation of the protoxide of iron into sesquioxide of iron by the oxygen of the air. Evidently, should the decomposition of the water and of the iodide of iron operate thus, this process should continue to that point when all the iodide of iron is decomposed; this does not take place.

\* *Répertoire de Pharmacie*, Bouchardat, Decemb., 1859, et *Union Pharmaceutique*, par Dorvault, January, 1860, &c.

[† See Gmelin's *Handbook*, vol. xv. 252.—*Ed. Am. Jour. Ph.*]

To explain the second fact, I asked myself what became of the free iodine? for surely it could not combine itself with the proto-iodide of iron to form a sesqui-iodide; the sesqui-iodide of iron being red, should have remained so; we know, upon the other hand, that water dissolves hardly more than  $\frac{1}{7000}$  of iodine, which, after some chemists, is transformed into iodic and hydriodic acids. The last question was, then, to know how free iodine acted upon sugar.

To elucidate this question, I made various experiments with iodine and simple syrup. I soon found that, with a moderate and prolonged heat, this metalloid added to the syrup was subject to a great chemical change.

One to ten grains of iodine, added to one ounce of simple syrup, in a strong bottle closed with a glass stopper, the whole exposed in a water bath at a moderate heat ( $60^{\circ}$  Centigrade), are dissolved little by little, and give the liquid a reddish brown color; but after several hours, the whole being always kept at the same temperature, the syrup again becomes discolored. The flask must be cautiously shaken from time to time. The whole operation occupies about 48 hours.

In operating with a syrup containing  $\frac{1}{2}$  drachm of iodine to the ounce, I obtained, with some trouble, however, a similar colorless product.

The greater the proportion of iodine, the more attention is required; and towards the end of the operation, care must be taken to remove the syrup as soon as it turns white.

Arrived at this point, if the preparation is left exposed to heat, it soon colors again; by and by the sugar is transformed into caramel; and this burned sugar, quickly destroyed in its turn, gives rise to carbonic acid and to a blackish, light and spongy substance, partly soluble in water and alcohol. Treated by hydrochloric acid, potash, &c., this substance shows the same reactions as ulmin and ulmic acid. To carry on this operation to the entire decomposition of the sugar, all necessary care must be taken to prevent a fracture of the flask by the expansion of carbonic acid gas, which is formed in quantities, and can be collected.

The more the temperature is elevated, the larger is the proportion of iodine, and quicker is the sugar decomposed.

This white syrup of iodine, or iodinised syrup, has sometimes an aroma of fruit; it is acid, unalterable by air, heat at 100° Centigrade decomposes it; it contains much glycese. Treated with the reagents, it behaves like iodides in general.

These are the facts; the theory remains to be given.

Does the iodine, all or in part, combine with the sugar  $C_{12}H_{11}O_{11}I$ , or to the glycese  $C_{12}H_{14}O_{14}I$ , to form iodides similar to the iodide of starch,  $C_{12}H_{10}O_{10}I$ ?

Or rather, in presence of sugar acting as a catalytic agent, should not iodine decompose the water into its elements, hydrogen and oxygen, and unite with them to form hydriodic and iodic acids? If so, these acids, once formed, would decompose the sugar precisely in the same way as the mineral and some other acids.

If not so, what are these acids, and how are they formed? Is it from the decomposition of the sugar or of the water?

Bromine acts upon sugar in the same manner as iodine, with the difference that the diverse phenomena follow more rapidly.

Chlorine acts upon simple syrup still more promptly than bromine; into water freshly saturated with chlorine, at a very cold temperature, I have thrown sugar, and heated the liquor as I have described for iodine. In less than half an hour the chlorine had disappeared, and the liquor was acid.

Chlorine was probably transformed into hydrochloric acid.

E. FOUGERA,

Pharmacien, New York.

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## ON ACONITIA AND ITS PHYSIOLOGICAL EFFECTS.

By M. ERNEST HOTTOT.

In a former paper (see January number, p. 59,) the author, in connection with M. Liégeois, has published some results. In the present paper, which is extracted from a thesis sustained before the Académie de Médecine by M. Hottot alone, the author has entered more fully into the subject, both as regards its preparation and physiological effects. The following method of preparing aconitia was adopted:

Macerate the aconite root in powder in a sufficient quantity

of alcohol of 85° during eight days. Displace the liquors, distill in a water bath, add a sufficient quantity of quicklime, agitate from time to time, filter, precipitate by a slight excess of diluted sulphuric acid, and evaporate to the consistence of syrup. Add to this liquid two or three times its weight of water, allow it to repose, and remove the green oil which floats and solidifies at 68° F., strain through a moistened filter to remove the last portions of oil; treat by ammonia in excess, and heat to ebullition; the aconitia is precipitated as a compact mass, which contains a great deal of resin, and separates easily from the liquor; wash the precipitate, treat it when dry by ether deprived of water and alcohol, and permit the ethereal liquor to evaporate spontaneously, which gives impure aconitia.

Dissolve the product thus obtained in diluted sulphuric acid, and precipitate it hot by ammonia; the aconitia separates in the form of a coagulum like codeia. Collect it on a filter, wash and dry it, dissolve in ether, evaporate to dryness, again dissolve in a small quantity of diluted sulphuric acid, and finally precipitate the aconitia by the addition, drop by drop, of an excess of ammonia; wash it, and dry at a low temperature.

Ten kilogrammes (22 lbs. av.) of the root of *aconitum napellus* in good order, gave a mean of 4 to 6 grammes (61 to 92 grains) of alkaloid.

Aconitia thus obtained presents the form of a white powder, extremely light, of a bitter taste: it is in the state of hydrate, and contains 20 per cent. of water; at 187° F. it melts and becomes anhydrous, and is then a transparent, amber-colored substance. Although the aconitia of M. Hottot has only been obtained in an amorphous state, it is very much more active than the aconitias of commerce, which are generally very impure, although they are often crystallized.\*

A singular thing, and well worthy of attention, is, that there exists in aconite root two distinct substances, which possess, in different degrees, the physiological properties of this substance. One is the amorphous aconitia of M. Hottot, the other is a substance which is presented in the form of well-defined crystals,

\* See the paper of Messrs. Smith in this volume, page 173, on *aconella* (narcotina) in aconite.—ED. AM. J. PHARM.



and which, after three successive crystallizations and evidently chemically pure, determined the same symptoms as amorphous aconitia, though in a much weaker degree. What is the nature of this substance which has been obtained by Mr. Morson, and for which he proposes the name of napellina? Is it a transformation of aconitia, or a co-existent body? Whatever it be, M. Hottot has studied aconitia, which presents the following properties :

Aconitia blues reddened litmus paper, saturates acids and forms salts which do not crystallize. It is a nitrogenous alkaloid, of which, the composition, according to M. Stahlsehmidt, is represented by  $C_{60} H_{17} O_{11} N$ . Treated hot by  $SO_3$ ,  $HO$ , it is colored first yellow, and afterwards violet red; tannin precipitates it abundantly; ioduretted iodide of potassium a kermes colored precipitate, and this reagent is its best antidote. Iodohydrargyrate of potassium gives a curdy yellowish-white precipitate; chloride of gold, yellow, and with chloride of platinum no precipitate.

M. Hottot employs aconitia in the form of pills, each containing the fifth of a milligramme ( $\frac{1}{325}$ th grain) or in the form of tincture one sixteenth of a grain to the drachm. The dose of the pills is from 2 to 10 per day, and of the tincture 10 to 40 drops.

The author has arrived at the following conclusions as to the physiological action of aconitia :

The root of aconite only should be used for making the preparations of aconite.

Aconitia has the same physiological properties as the root. The irritant properties of aconite, usually attributed to an acrid principle, belongs to aconitia. Its action is exercised on the mucous membranes.

The absorption of aconitia by the intestinal canal is more rapid than is that of curara and strychnia by the same tissue, and this explains the rapidity of the death of animals to which even small doses of aconitia have been given.

Aconitia acts on the nervous centres and successively on the bulb, the spinal marrow, and the brain.

The symptoms manifest themselves in the following order :

suspension of respiration, of general sensibility, of reflex sensibility, and of voluntary movements.

Aconitia disturbs the functions of the heart by acting on its nervous tissues.

The effects of aconitia on man are the following: Irritation of the mucous membranes, salivation, nausea, muscular weakness, prickling, sweats, heaviness of the head, pain in the track of the facial nerves, dilatations of the pupils, slow respiration, depression of the pulse and weakness of sensibility.

Aconitia is a powerful sedative: in external forms it has been applied with success in calming neuralgic and rheumatic pain; internally it may be given from  $\frac{1}{150}$ th to  $\frac{1}{2}$ d of a grain the maximum dose.

In conclusion M. Hottot cautions physicians and pharmacutists in relation to the variable nature or power of commercial aconitia as made by different processes.—*Journal de Pharmacie, Avril, 1864—30.*

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#### GLEANINGS FROM FOREIGN JOURNALS.

*Dentifrice powder.* Take of cream of tartar 100 grammes, Kaolin 100 grammes, Tannin 2 grammes, Sugar 50 grammes, Orris Powder 25 grammes, Essence of Mint 15 drops.

Trituate separately each of these substances, mix afterwards with care to form a homogeneous powder, and lastly aromatize with the essence of mint.

*Effervescing Powders.* C. Bedall proposes preparing a mixture of tartaric acid and bicarbonate of soda, in granular form, and permanent in the air; by mixing well dried tartaric acid and bicarbonate of soda, in the proportion of 5 to 6, with sufficient strong alcohol to reduce it to a moist condition, pass it then through a somewhat coarse sieve and thoroughly drying it. If desired it may be flavored by a little oil of lemon dissolved in the alcohol. A mixture thus prepared effervesces upon the addition of water, to the last crumb.—*N. Jahrb. Ph. xx. 75.*

*Sweet Spirits Nitre.* According to Fieldhaus the conversion of the nitrates of alkalies into nitrites is best effected by melting

with metallic lead. Four ounces nitrate potassa with an equal weight of lead are melted together in an iron pan to a dull red heat, with constant stirring and the addition of about an ounce of lead. After the lead is mostly oxidized, it is heated to strong redness. The undecomposed nitrate is separated by crystallization, and the oxide of lead remains as a very fine powder. To prepare the nitrous ether, the solution of the nitrite is allowed to flow steadily into a mixture of alcohol and sulphuric acid; or, on the other hand, the acid mixture may be added gradually to the nitrite in pieces the size of a nut. The nitrous ether begins to form immediately, without the application of heat. From 500 grms. fused nitrite of potassa, and 500 grms. sulphuric acid, alcohol and water, 255 grms. nitrous ether may be obtained. Thus prepared it is somewhat acid, which may be neutralized in the usual way. The author considers this process an economical one for the production of sweet spirits of nitre, which contains from 1 to 5 per cent. of this ether.—*Ann. Ch. u Pharm.* cxxvi. 71, *N. Jahrb. Ph.* xx. 93.

*Pernanganate of Potassa* is recommended as a rapid and excellent stain for wood. A solution of it spread upon pear or cherry wood, for a few minutes, leaves a permanent dark brown color, which, after careful washing, drying and oiling, assumes a reddish tint upon being polished.—*N. Jahrb. Ph.* xx. 169.

*Persian Insect Powder.* Prof. Koch, states the insecticide power of this article is due to a volatile oil, residing in the pollen of the flowers.—*N. Jahrb. Ph.* xx. 155.

*Rendering bitter substances tasteless.* The addition of a small quantity of chloroform to bitter draughts has been recommended as a means of facilitating their administration. The anæsthetic power of the chloroform, being exerted upon the organs of taste, deadens their perceptions. A drop of chloroform spread upon the tongue before tasting such medicines, is suggested as equally satisfactory.—*N. Jahrb. Ph.* xx. 157.

*Preparation of Prussic Acid.* Messrs. Bussy & Buignet have arrived at the following conclusions in regard to the preparation of this acid:—

1. In the process of Gea Pessina, the quantity of hydrocy-

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anic acid obtained is more nearly the theoretical quantity than is the process of M. Gay Lussac.

2. The apparatus of Gea Pessina can be modified very easily to furnish the anhydrous acid.

3. Medicinal prussic acid, obtained with this anhydrous acid, is more stable than that which is obtained by the acid of Gay Lussac.

4. The stability of the acid of Gea Pessina has always a relative stability, the two acids being subject to the same phenomena of decomposition, and differ only in the time necessary to manifest these phenomena.

5. The acid of Gea Pessina does not owe its relative stability to the influence of the water, which is united with it, in the process of preparing it.

6. When the decomposition of hydrocyanic acid has commenced, under the influence of the light, it continues itself rapidly in the dark.

7. Hydrocyanic acid can be exposed to the light during a certain time without its appearance being modified, but in this case it has submitted to an influence which predisposes it to alteration and renders it more easily decomposable in the dark.

8. In measure as medicinal prussic acid is clouded and colored, its proportion of hydrocyanic acid is lessened gradually, and after a time, not very long, none of the acid, free or combined, can be found in it.—*Jour. de Chim. Méd., Mars, 1864.*

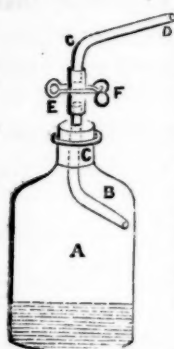
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### ON THE VOLUMETRIC ESTIMATION OF TANNIC AND GALLIC ACIDS, IRON, MANGANESE, &c.

BY MORITZ MITTENZWEY.

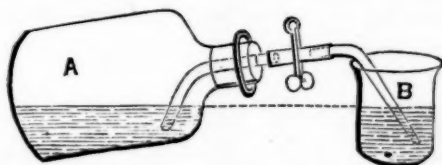
The known disposition of tannic acid in alkaline solution to absorb oxygen from the air affords an excellent means of estimating this body for technical purposes. The estimation can be conveniently made in the simple apparatus here figured and described.

The air in a bottle (A), capable of holding about a litre and



a half, communicates with the atmosphere by the bent tubes (B) and (C), the latter being drawn out at the end (D) to the diameter of about one or one and a-half millimetres. The two glass tubes are united by means of a moderately long piece of india rubber tubing (E), provided with a pinchcock (F) to close it; and the lower glass tube is fixed in the neck of the bottle by a bored cork, or, better, a caoutchouc stopper (G).

In executing the analysis it is absolutely necessary that the air in the bottle should be perfectly renewed, and the temperature of all reaching the fluid be the same as that of the laboratory. As soon as the absorbing lye (which should amount to 150 or 250 c.c.) is prepared, the bottle should be perfectly closed, and then the pinchcock opened just for a moment, so that the pressure of the internal and external air may be equalised. The absorption of the oxygen is then hastened by strongly shaking the bottle, which must be wrapped in a cloth to avoid raising the temperature by the warmth of the hand. After each shaking, water must be allowed to flow into the bottle (A) from a weighed quantity in a beaker (B. Fig. 2), so that the fluid in the two vessels may attain the same level, as shown in the drawing. The experiment is ended when, after



repeated shakings, no more water runs from B to A, and the difference in the weight of the water in the beaker in *grammes* gives the amount of oxygen absorbed in cubic centimetres, which can be corrected for the standard temperature and pressure.

1. *For Gallic and Tannic Acid.*—Place in the bottle about 200 c.c of a 3 per cent. potash or soda solution, then drop in one gramme of tannic or gallic acid loosely wrapped in paper

and proceed as above described. The absorption is at first rapid, and in the case of gallic acid is soon complete; with tannic acid a longer time is required.

One gramme of tannic acid will absorb the same amount of oxygen as 0.7 gramme of gallic acid, namely, 175 c.c. at 20°C. In twelve experiments the greatest variation in the case of tannic acid amounted to only 2 c.c., and with gallic acid only 1.2 c.c. From six to ten experiments can be carried on simultaneously with ease, and indeed with advantage.

The best alkaline solution to use is a soda solution containing 2 or 3 per cent. of caustic soda, or a potash solution with from 3 to 5 per cent. of the caustic alkali. Experiments have proved strong solutions to be useless; for example, one gramme of tannic acid in a potash solution containing 35 per cent. of alkali only absorbed 22 c.c. of oxygen. Further experiments confirmed this unexpected result.

It has been already remarked that gallic acid absorbs oxygen with much greater readiness than tannic. One gramme of tannic acid, after shaking for 60 seconds, only absorbed 23.4 c.c.; while 0.7 gramme of gallic acid, after shaking for the same time, absorbed 71 c.c. of oxygen, the same proportion of each acid taking up when the absorption is complete one and the same volume (175 c.c.). We have here an indication of a means of estimating the two acids in the presence of each other. Suppose, for example, we have a substance, 2 grammes of which absorb 140 c.c., this will answer to  $\frac{140}{175} = 0.800$  grammes of tannic acid, or to  $\frac{140}{175} \cdot 0.7 = 0.560$  of gallic acid. For a second and decisive experiment, we now weigh as much of the substance as should combine with 175 c.c., in this case  $2 \cdot \frac{175}{140} = 2.500$  grammes, and shake this strongly with the lye, for 60 seconds. Suppose, after this, we have 20 c.c. absorbed, we have then a decisive proof of the presence of both acids, and we can draw a conclusion as to their respective proportions.

It must be observed that in these experiments an equal weight of the substance, equally strong alkaline solutions, and a flask of equal size, and of similar form (about 1.4 litre capacity), are indispensable conditions.

The following table, which gives the means of the numbers



obtained in three experiments after shaking for sixty seconds, show sufficiently concordant results:—

1.000	grammes	Tannic acid	}	absorbed 23.4 c.c.
0.000	"	Gallie acid		
0.900	"	Tannic acid	}	" 27.5 c.c.
0.070	"	Gallie acid		
0.570	"	Tannic acid	}	" 44.0 c.c.
0.300	"	Gallie acid		
0.200	"	Tannic acid	}	" 61.0 c.c.
0.560	"	Gallie acid		
0.000	"	Tannic acid	}	" 71.0 c.c.
0.700	"	Gallie acid		

A rather roundabout but quite conclusive experiment may be made in the following way:—The mixture to be estimated is dissolved in a known quantity of water, and the tannic acid precipitated by gelatine; the gallic acid solution is then transferred to the absorption bottle to be estimated. A second experiment is then made with the mixture, and so all necessary data for the calculation are obtained.

In making use of the process to determine the tannic acid in leather, gall nuts, sumach, bark, &c., we proceed in the same way as with pure tannin. If the amount of tannic acid usually present in the substance is not already known it is advisable to make a preliminary experiment with a small quantity, and afterwards proceed with the quantity calculated to absorb 175 c.c. By a parallel experiment made with one gramme of tannin and shaking for 120 seconds, the amount of gallic acid will be discovered.

This method of analysis is only available for the ordinary commercial substances. Whether all the so-called tannic acids have the same capacity for the absorption of oxygen as ordinary tannic acid is as yet undetermined.

*To Estimate Tannin in Leather.*—From 4 to 7 grammes of the leather is cut into the thinnest possible slices, which are digested in about 200 c.c. of warm water; after cooling, from 7 to 10 grammes of stick potash wrapped in paper is dropped into the flask, and the shaking proceeded with.

With *sumach and oak bark* the same method is followed, or a

hot-filtered decoction is used. The results with the decoction always differ from those with the substance itself, the latter being higher, which seems to show that a portion of the tannic acid withstands the solvent action of the water.

*Gall nuts, catechu* in powder may be estimated in the same way as pure tannic acid.

II. *Iron Compounds*.—These must be reduced to the state of protoxide by means of zinc, and the excess of acid neutralized with caustic potash or soda. (Ammonia and the carbonated alkalies must be avoided.) The solution is then poured into the absorption-flask and pieces of potash wrapped in paper are then dropped in. The absorption is complete in a very short time. For accuracy this process is second to none, and may be recommended in preference to that of Margueritte and Fuchs, since it requires fewer precautions. 50 c.c. of a solution of protoxide which contained 1.395 Fe absorbed in three experiments 148.0 c.c., 148.44 c.c., and 148.4 c.c. of oxygen at 19 C.; the mean = 148.28 c.c., which at this temperature weigh 0.1987 grammes, answering to 1.391 grammes of iron.

III. *Manganese Compounds*.—As these are easily reduced to the state of protoxide, the estimation is made in the same way as in the case of protoxide of iron, but it is necessary to know to what extent the protoxide of manganese unites with iron. Further experiments are required to determine this point, and the following proportional numbers are only the results of some few experiments that have led to the conclusion that one part by weight of absorbed oxygen corresponds to 4.34 parts by weight of manganese, which may be calculated as the oxide  $Mn_2O_3$ . In the absence of more complete researches it is superfluous to discuss the rational formula of the resulting oxide; but one thing is certain—namely, that the oxidation does not proceed so far as the state of binoxide.

The estimation of manganese in the presence of iron is performed in two operations—one with the iron in the state of protoxide, and the absorption observed in the two cases. The combination of the two results will give the desired explanation.

Active oxygen may be estimated in a similar way, by means of a solution of protoxide of iron.

*Indigo* may be valued in the following way:—In a well-closed glass bottle, finely powdered indigo is reduced by means of potash or lime and a protosalt of iron, under a layer of mineral oil. When the precipitate has completely deposited, a certain volume of the clear solution of indigo-white is removed by means of a pipette, care being taken that a layer of oil swims on the surface of the solution. The pipette is then emptied into the absorption bottle, which must also contain oil, and the shaking is continued until the indigo blue is re-formed.

According to theory, 8 parts by weight of combined oxygen answer to 131 parts of indigo blue; or, for one gramme of indigo blue 45.7 c.c. of oxygen at 20°C. are required. From these numbers we may see at once what degree of accuracy this way of analysing indigo promises.—*Journ. fur Prakt. Chem.*, from *Chem. News*, London, May, 1864.

#### WHY BEES WORK IN THE DARK.

A lifetime might be spent in investigating the mysteries hidden in a bee-hive, and still half of the secrets would be undiscovered. The formation of the cell has long been a celebrated problem for the mathematician, whilst the changes which the honey undergoes offer at least an equal interest to the chemist. Every one knows what honey fresh from the comb is like. It is a clear yellow syrup, without a trace of solid sugar in it. Upon straining, however, it gradually assumes a crystalline appearance—it *candies*, as the saying is—and ultimately becomes a solid mass of sugar. It has not been suspected that this change was a photographic action. That the same agent which alters the molecular arrangement of the iodide of silver on the excited collodion plate, and determines the formations of camphor and iodine crystals in a bottle, causes the syrupy honey to assume a crystalline form. This, however, is the case. M. Scheibler has enclosed honey in stoppered flasks, some of which he has kept in perfect darkness, whilst others have been exposed to the light. The invariable result has been that the sunned portion rapidly crystallises, whilst that kept in the dark has remained perfectly liquid. We now see why bees are so

careful to work in perfect darkness, and why they are so careful to obscure the glass windows which are sometimes placed in their hives. The existence of their young depends on the liquidity of the saccharine food presented to them, and if light were allowed access to this the syrup would gradually acquire a more or less solid consistency; it would seal up the cells, and in all probability prove fatal to the inmates of the hives.—*Chem. News, London, April 30, 1864, from Chronicle of Optics, "Quarterly Journal of Science."*

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#### ON THE REMOVAL OF STAINS FROM SILK.

To the Editor of the Pharmaceutical Journal:

SIR,—I send you the following particulars, thinking they may be interesting, if not useful, to some of your readers who may yet be uninformed on the subject:—

Being anxious to discover some means by which the color could be restored that had been extracted from a violet silk dress by acid-juice having been accidentally thrown upon it, I applied to more than one chemist and druggist, thinking there must be some chemical agent which would restore violet, as spirit of hartshorne, it is well known, will restore black.

Not being able to obtain any information on the subject, I thought of trying some experiments for myself; the first proving successful may be worth recording, if only to amuse the more learned with an account of the simple attempts of an amateur.

Having recently superintended the "iodine process" for annihilating a blot of marking-ink from linen, it occurred to me to try it upon the violet silk; the plan I adopted is as follows, and will serve as a recipe:—*Brush the portion of fabric with tincture of iodine, then, after a few seconds, well saturate the spot with a solution of hyposulphite of soda, and dry gradually; the color is perfectly restored, and I consider my experiment highly satisfactory.*

M. A. B.

March, 1864.

P. S.—I should have stated that it was knowing something of the chemical composition and properties of iodine induced me to make the experiment which I have described.—*London Pharm. Jour., April, 1864.*

## ON CINCHONA CULTURE IN INDIA.

BY DR. DE VRY.

Dr. De Vry communicated a paper "*On the Cinchona Cultivation in British India*," which was read by Mr. Hanbury. After a six years' residence in Java, the author has obtained leave of absence for two years to recruit his health; and on his way home he made a visit to the British cinchona plantations in Ceylon and on the Neilgherry Hills in the Madras Presidency. Two systems of cultivation appear to be followed in the British possessions, one in dense forest shade, and the other in the open sunshine. In the Dutch settlement at Java the plants are grown in dense shade, and the author was anxious to investigate for himself the results of the cultivation in sunshine. In Ceylon he found the *Cinchona succirubra* grown at an elevation of 1600 feet in the shade. The plants were healthy, and from 8 to 9 feet high. They were found to grow better in loftier situations, and the leaves in plants grown in high situations contained twice as much quinovic acid as those grown in lower. An immense number of the *Cinchona succirubra* plants are growing in Ceylon, some in sunshine and some in shade; and a plant thirty-one months old has attained a height of 10 feet and the circumference of 7 inches. At one station there were fifty-seven healthy plants of *Cinchona Calisaya*. The loss of plants by death, Dr. De Vry was surprised to learn, was only  $\frac{1}{10}$ th per cent. in Ceylon; in Java the average loss was 10 per cent. From Ceylon the author went to India, and visited Otacamund, where he found the plants under Mr. McIvor's charge in an excellent state. In three years the number has increased from 1000 to 243,166; and a most extraordinary instance of multiplication was seen in the case of the single specimen of *C. uritasinga*, received eighteen months before from Mr. Howard, from which plant alone 4730 others had been obtained by cuttings and buds. It was noticed that plants from large cuttings were in a less satisfactory state than those from small. The plants were all healthy, and in this part were grown in open sunshine, which Mr. McIvor considers most favorable to their growth. Wherever he could, Dr. De Vry obtained specimens of leaves and the bark of both root and stem, and

these he has submitted to analysis. His results are contained in an elaborate table, which was not read to the meeting. The author estimated the quinine, cinchonine, quinidine, and cinchonidine, and noticed another alkaloid, soluble in ether, which does not give the reactions of quinine, and which somewhat complicated the results. He also determined the quinovic acid in the leaves, which he considers an essential constituent of the cinchonas. Besides this acid, the leaves yielded traces of alkaloids, but not quinine. An experiment had been made to test the effects of thickening the bark by wrapping moss around the stem, and it had proved successful. The bark of a young plant so treated yielded 8.4 per cent. of alkaloids. One unexpected result obtained in Dr. De Vry's experiments was that the root bark was found to contain more of the alkaloids than the bark of the stem. In conclusion, the author expressed his belief that the cultivation of cinchona in India had proved a complete success, and that future results would show it as lucrative as it is now interesting in a scientific point of view.

Mr. Morson called attention to the circumstance of quinovic acid appearing in the plant before the quinine. In the poppy it had been noticed that meconic acid appeared long before morphia.

Mr. D. Hanbury, Jr., thanked Mr. De Vry for his interesting communication, and remarked on the extraordinary increase in the number of plants, a single plant being increased to 4000 without seed.

Dr. De Vry said that Mr. McIvor preferred to propagate by cuttings, and not by seeds. He also starved the plants to compel them to make root, which would appear to be the most valuable part of the plant, for he had himself found eight times more alkali in the bark of the root than he had found in the bark of the stem. It might perhaps prove more useful to cultivate the plant for the root than the bark. Experiments were now in progress in Java to determine that point. He believed that the bark of the root of South American cinchona had been used in France.

Mr. Hanbury said that the root bark of the *C. Calisaya* had been imported into England, but although it was very cheap it would not sell.



Mr. Morson inquired whether quinovic acid possessed any medicinal properties?

Dr. De Vry replied that he believed it had; he had made experiments on the subject, and intended shortly to publish his results.

Professor Bentley said that Dr. De Vry's account of our cinchona plantations was very assuring. One fact mentioned, however, was at variance with a statement of Mr. Howard, who had asserted that the root bark of *C. Calisaya* only contained one-tenth of the alkaloids found in the bark of the stem. There was, of course, no question about the accuracy of Dr. De Vry's results, and it might be that the difference was owing to different ages of the plants.

Dr. De Vry said that the whole of his results had been confirmed by Delondre, with whom he had worked.—*Trans. Pharm. Soc. in Chem. News, London, May 14, 1864.*

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#### HOW THE CHINESE MAKE DWARF TREES.

We have all known from childhood how the Chinese cramp their women's feet, and so manage to make them "keepers at home;" but how they contrive to grow miniature pines and oaks in flower-pots for half a century, has always been much of a secret. It is the product chiefly of skilful, long-continued root-pruning. They aim first and last at the seat of vigorous growth, endeavoring to weaken it as far as may consist with the preservation of life. They begin at the beginning. Taking a young plant (say a seedling or cutting of a cedar), when only two or three inches high, they cut off its taproot as soon as it has other rootlets enough to live upon, and replant it in a shallow earthen pot or pan. The end of the taproot is generally made to rest on the bottom of the pan, or on a flat stone within it. Alluvial clay is then put into the pot, much of it in bits the size of beans, and just enough in kind and quantity to furnish a scanty nourishment to the plant. Water enough is given to keep it in growth, but not enough to excite a vigorous habit. So, likewise, in the application of light and heat. As the Chinese pride themselves on the shape of their miniature trees, they use strings, wires, and pegs, and various other me-

chanical contrivances, to promote symmetry of habit, or to fashion their pets into odd fancy figures. Thus, by the use of very shallow pots, the growth of the taproots is out of the question; by the use of poor soil and little of it, and little water, strong growth is prevented. Then, too, the top and side roots being within easy reach of the gardener, are shortened by his pruning-knife or seared with his hot iron. So the little tree, finding itself headed on every side, gives up the idea of strong growth, asking only for life, and just growth enough to live and look well. Accordingly, each new set of leaves becomes more and more stunted, the buds and rootlets are diminished in proportion, and at length a balance is established between every part of the tree, making it a dwarf in all respects. In some kinds of trees this end is reached in three or four years; in others ten or fifteen years are necessary. Such is fancy horticulture among the Celestials.—*Lond. Pharm. Journ.*, May, 1864, from *The Technologist*.

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DECOMPOSITION OF WATER BY PHOSPHORUS, ARSENIC, AND  
ANTIMONY, UNDER THE INFLUENCE OF NITRIC ACID,  
WITH PRODUCTION OF AMMONIA.

BY M. PERSONNE.

The solution of phosphorus in nitric acid, concentrated or diluted with one or two volumes of water, is, as is well known, effected with disengagement of nitrous vapor, abundant if the acid is concentrated, and diminishing in proportion as it is more diluted. In any case if, when the solution is effected, excess of potash is added to the hot solution, sufficient ammonia is disengaged to become evident, both by reagents and by its odor. Whether normal or amorphous phosphorus is used in this operation, the phenomena and the products are identical.

It was interesting to ascertain whether the fact of the production of ammonia was observable with the bodies forming part of the phosphorus group, as arsenic and antimony.

I operated with distilled arsenic and with antimony purified three times by fusion with nitre.

These two bodies pulverized and heated were attacked by nitric acid, diluted with its volume of water. Under these cir-

circumstances arsenic is easily attacked, giving arsenious acid and a little arsenic acid; antimony, on the contrary, is attacked with more difficulty. However that may be, if ammonia is looked for in the liquids obtained it will be found that these two bodies have behaved like phosphorus, with this difference, that phosphorus gives more ammonia than does arsenic, and arsenic more than antimony.

The phenomenon of the formation of ammonia by the decomposition of water under the influence of nitric acid has hitherto been observed only with metals of the third and fourth section, as iron, zinc, tin, &c.

The above observations show that this phenomenon is not limited to these metals, but belongs equally to the metalloids of the phosphorus group.—*Lond. Chem. News*, May 21, 1864, from *Bulletin de la Société Chimique*, vi. 163.

#### DULOS' PROCESSES OF ENGRAVING.

A copper plate, on which the design has been traced with lithographic ink, receives, by the action of the pile, a deposit of iron on the parts untouched by the ink; the ink having been removed by means of benzine, the white portions of the design are represented by the layer of iron, and the black by the copper itself; the plate is then plunged into a bath of cyanide of silver, under a galvanic current, and the silver is deposited on the copper only. In this condition mercury is poured over the plate, which attaches itself to the silvered portions only, appearing in relief, and taking the place of the lithographic ink. Then take, in plaster or melted wax, an imprint, the cast of which presenting the counterpart of the projections of mercury, gives a kind of copper plate engraving. This cast has not sufficient strength to bear the press; but by metallising the mould, and depositing upon it, electro-chemically, a layer of copper, we obtain an exact reproduction of the original projections of mercury, and in some sort a matrix by means of which impressions of the plate may be produced *ad infinitum*.

For typographic engraving (figures in relief), the plate of copper should receive, on leaving the hands of the designer, a layer of silver, deposited only on the parts untouched by the

lithographic ink; the ink is removed by benzine, the surfaces first covered by the design are oxidised, and the treatment above described is continued. At the end of the operation the raised portions of the electro-chemical plate intended for the impression will be found to correspond with the tracing of the design, and the hollow portions with the thickenings raised about the design by the mercury.

This process, which is the starting-point and the basis of M. Dulos' invention, has led him to the discovery of some more simple methods, which have led to important practical results, the fusible metal or amalgam of copper substituted for mercury giving rapid and remarkably perfect results.—*London Chem. News*, May 21, 1864, from *Moniteur Scientifique*, vi. 215.

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#### PERMEABILITY OF IRON BY HYDROGEN.

Our readers may recollect our having, some months ago, mentioned certain experiments made by MM. H. Sainte-Claire Deville and Troost, from which it appeared that, by a kind of endosmosis scarcely to be suspected in the case of a metal, hydrogen would pass through the pores of a platinum tube. Last week, the Academy of Sciences received from them a new paper, in which they announce a similar property in iron. The great difficulty was to find a tube answering to the various conditions required for the experiment. The best iron to be found in the markets might still be open to some objection, since in point of fact it is a mere sponge flattened by a hammer, like common plantinum. They succeeded at length, through the kindness of a friend, in obtaining a tube of cast steel, containing so little carbon that it did not admit of being tempered. It was in reality rather iron than steel, and so soft that it was drawn into a tube without heating or soldering; though its sides were of a thickness of from three to four millimetres. To the ends of this tube, two other tubes of a much smaller diameter and of copper, were soldered with silver; the whole was then introduced into an open porcelain tube, which was put into a furnace; a glass tube, luted to one end, established a communication with an apparatus generating hydrogen completely deprived of atmospheric air; while at

the other end, another glass tube, bent at right angles, dipped into a mercury bath, its vertical branch being 80 centimetres long. For the space of eight or ten hours, a current of hydrogen was driven through the apparatus, which was maintained at a high temperature, so as to exhaust the action of the hydrogen on the sides of the iron tube, and to drive away all the atmospheric air, as well as the moisture contained in the tube, or likely to be produced there. This done, the communication between the iron tube and the hydrogen apparatus was cut off by melting down the glass tube by the aid of the blowpipe. No sooner was this effected, than the mercury, no longer kept down by the stream of hydrogen, yielded to the pressure of the air, and rose in the vertical glass tube to the height of 740 millimetres, or very nearly the usual barometrical height. This would not have happened, had there not been a nearly complete vacuum in the tube the instant the supply of hydrogen was cut off. But what had become of the hydrogen supplied before? There is but one explanation possible, viz : that, notwithstanding the pressure of the atmosphere, the hydrogen had passed through the pores of the steel tube. Hence an iron tube introduced into a furnace where there are reducing gases, is a most powerful instrument for carrying off all the hydrogen.—*Amer. Journ. Sci. and Arts*, May, 1864, from *Galvani*.

#### BOTANICAL GARDENS OF THE BRITISH COLONIES.

One of the principal supports for the cultivation of the Natural Sciences, and which insure her superiority, England derives from the numerous botanical gardens, which have been established, some of them for a considerable time, and all of them under the supervision of competent men, at various stations in her principal colonies. Among these:

In *Canada*, the *Kingston Botanical Garden*, Dr. Lawson, Director.

In *Jamaica*, the *Bath Botanical Garden*, N. Wilson, Superintendent.

In *Trinidad*, *St. Anne's Botanical Garden*, Dr. H. Kreuger, Director.

In *East India*, at *Calcutta*, the *Royal Botanical Garden*. Dr. Thomas Thomson, F.R.S., F.L.S., Superintendent; Dr. Thomas Anderson, F.L.S., acting Superintendent.

The *Agricultural Society's Nursery Gardens*, A. H. Bleekyn-den, Esq., Secretary.

At *Bombay*, the *Botanical Garden*, Heura, N. A. Datzell, Esq., Superintendent.

At *Madras*, the *Horticultural Garden*, Mr. A. F. Jeffray, Superintendent.

At *Bangalore*, *Public Garden*, under Mr. W. New, Superintendent.

At *Octacamund*, *Nilgherry Hills* (*Cinchona* plantation), under W. G. McIvor.

At *Saharumpore*, the *Botanical Garden*, W. Jameson, Bengal army, Superintendent.

At *Menghyr*, *Public Garden*, T. E. Ravenshaw, B.C.S., Secretary.

At *Etawah*, *Horticultural Garden*, A. O. Hume, Esq., B.C.S., Secretary.

At *Balasore*, *Agricultural Society's Gardens*, Dr. A. A. Mantell, Secretary.

On *Ceylon*, *Royal Botanical Gardens*, Paradenia, near Kandy, G. H. K. Thwaites, Esq., F.L.S., Director.

In *Australia*:

At *Victoria*, *Melbourne Botanical Garden*, Dr. F. Mueller, F.R.S., F.L.S., Director.

At *Victoria*, *Gippsland Botanical Gardens*, Mr. Sale.

At *Sidney*, *Botanical Gardens*, Chas. Moore, Esq., F.L.S., Director; Mr. James Kidd, Superintendent.

At *Queensland*, *Brisbane Botanical Gardens*, Mr. Walter Hill, Colonial Botanist and Director of Botanical Gardens and the Queen's Domains.

*South Australia*, *Adelaide Botanical Gardens*, Mr. G. W. Francis, Superintendent.

*Tasmania*, *Royal Society's Gardens*, Hobarton, Mr. F. Abott, Jr., Superintendent.

In *Africa*—*Mauritius*: *Royal Botanical Garden*, Mr. James Duncan, Superintendent.



*Cape of Good Hope, Botanical Garden, Cape Town, Mr. Brown.*

*Natal, Botanical Garden, Mr. Mark J. McKen, Esq.; D'Urban, Curator.—Drug. Circ., May, 1864.*

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SAVORY AND MOORE'S ATROPIZED AND CALABARIZED GELATIN.

In the *Chemist and Druggist* of July 15, 1863, is an account by Mr. Tegetmeier of the singular properties of the ordeal bean of Calabar, the *Physostigma venenosum*. The article describes the singular effect of this poisonous bean in causing contraction of the pupil, when a solution is dropped into the eye, its action being precisely the reverse of that of the *Atropa Belladonna*.

It is obvious that so potent and peculiar an agent was not likely to remain long unutilized, and as soon as a supply of this scarce seed could be obtained it was applied to practical purposes. The mode of using it, by dropping a solution into the eye, being found inconvenient, Mr. Stretfield proposed saturating small pieces of paper with the solution, and placing them beneath the eyelid. This plan is also inconvenient, as it necessitates the removal of the paper subsequently. Messrs. Savory and Moore have recently, at the suggestion of Mr. Ernest Hart, introduced a new and very convenient mode of employing the remedy.

The solution of the Calabar bean is mixed with gelatin, and then evaporated, so as to leave an exceedingly thin film. This film is cut up into minute circular discs, about the size of this letter O.

One of these is easily placed in the eye, by directing the patient to gaze upwards, and while the eye is in this position drawing down the under lid and applying the gelatin to the lower part of the ball. The eye is then closed, the gelatin speedily softens, and the remedial agent is slowly dissolved and absorbed. As before stated, the action of the Calabar bean is to cause contraction of the iris, so as to give rise, temporarily, to the condition of imperforate iris. The advantage to the oculist of being able to produce this condition at will, need not be insisted on.

Messrs. Savory and Moore have also prepared gelatin discs with belladonna for dilating the pupil. These are made of several degrees of strength, containing respectively  $\frac{1}{20,000}$ th,  $\frac{1}{50,000}$ th, and  $\frac{1}{100,000}$ th of a grain of atropine. The certainty of action of these discs and the greater convenience in use over the ordinary mode of employing belladonna is evident. Both remedies are packed in very small glass tubes, each containing 150 discs.

So successful has this mode of employing remedial agents been found in practice, that Messrs. Savory and Moore are now preparing morphine, ergotine, iodide of potassium, bromide of potassium and bromide of ammonium in the same manner. —*Chemist and Druggist*, May, 1864.

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#### ON CONIA.

BY DR. JAMES YOUNG.

Dr. James Young read the following remarks on "Cicutine:"

The question, What is Cicutine? may reasonably be asked by some here, as it has only recently been introduced as a medicinal agent, and has no place assigned to it in the British Pharmacopœia.

The object of the following remarks is to throw some light on the subject.

It will suit my purpose better to mention first the physiological action of the drug, before I make a few remarks on its histology. Case I.—In the month of November last, while I was in attendance on a lady from Fife, I had occasion to have a consultation with Professor Simpson relative to her complaint. When Dr. Simpson had carefully examined the patient—his diagnosis being neuralgia of the pelvic cellular tissue—he recommended me to put her immediately under Cicutine. I spoke to my friend Mr. Mackay regarding this new drug. He failed to obtain any of the granules in town, but speedily received some from London, or Paris, where the granules are prepared by M. Pelletier. I ordered this patient to take three of the granules per day, until she had taken some two dozen or more, with the most marked results; nay, let me tell you,

her own remark was, "What a wonderful medicine!" This lady was requested to continue the same medicine after she went home if the neuralgic pain returned. Let me only add, that the pain of which she was relieved was constant and severe. Case II.—The next patient for whom I prescribed this medicine was the late Mr. H. He suffered for a long time from neuralgia of the extensor muscles of the lower part of the leg. In November, 1863, I put him under Cicutine granules, which he continued for a week, by which time he was completely relieved of pain, and continued so for four days; but on the fifth day the pain returned, and ultimately only yielded to the subcutaneous injection of morphia, and even that was but temporary, as the disease increased till he died.

When Dr. Christison saw Mr. H. with me, I told him of the great relief afforded to my patient by the use of Cicutine, which led to a conversation regarding this new remedial agent. Dr. Christison supposed, at first, that Cicutine was the alkaloid of *Cicuta virosa*, or Water Hemlock, which is not used in medicine, as it is considered a narcotico-acrid poison, causing true tetanic convulsions.

I told him that I understood Cicutine to be the same as Conëin. We accordingly met the next day and subjected one of the granules to a careful analysis, when Dr. C. and I distinctly traced in it the peculiar mousy odor of Conium. This Cicutine, then, is Conia, or Conicin, the peculiar alkaloid or active principle of hemlock. Each granule contains  $\frac{1}{80}$  of a grain of the alkaloid.

In Neligan's "Materia Medica," I find a recommendation of Conëin in neuralgic affections, as he has known it alleviate pain in doses of  $\frac{1}{80}$  of a grain.

At page 233 of Dunglison's Medical Dictionary, I find Cicutine, or Conicine, mentioned as the active principle of *Conium maculatum*, and that either it or its salts have been given as sedatives to the nervous centres in neuralgic diseases.

Mention is also made of Cicutine by Mr. Justus Liebig under Volatile Bases, where he says that Conicine, or Cicutine, or Conin, was discovered by Gieseke, but first obtained pure by Geiger; that it occurs in *Conium maculatum*, having a formula

of  $C_{16}H_{15}N$ , and symbol of  $CoX$ . It is easily miscible with alcohol or ether.

I have said that no place has been assigned to Cicutine in the British Pharmacopœia; I find, nevertheless, that Dr. Garrod, of King's College, in his last lecture on the British Pharmacopœia, has some remarks on *Conium maculatum*, where he says that it owes its activity to its alkaloid Conia. He speaks of the tincture, Succus, but we fail to find any remark on the medicinal effect of the pure alkaloid alone.

I have prescribed Cicutine for many other patients besides the two mentioned, but I must refrain from any notice of them, as to the effects of the drug, as there has not been sufficient time, and one of the patients I refer to has gone to Dumfries; but I considered myself justified, from what we have already seen of this new remedy, in bringing it under the notice of the Pharmaceutical Society.—*Pharm. Journ.*, Lond., March, 1864.

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#### AN OIL LAKE IN TRINIDAD.

There is in Trinidad, only a mile from the coast, a basin of ninety-nine acres, filled with asphalt, yielding seventy gallons of crude oil per ton. There are also springs of asphaltic oil in the neighborhood, and large pitch banks off the shore. It is estimated that the lake is capable of producing three hundred million gallons of oil, and forty or fifty gallons are considered equal to a ton of coal. The *Trinidad Colonist* publishes a *memoire* by Mr. Stollmeyer, of Port of Spain, proposing the use of this liquid fuel for oceanic steam navigation: and he states that he has been, at various times, for these three years, suggesting this employment of a distillate from the pitch lake of Trinidad. To oil a ship would not take above a tenth of the time it takes to coal her, if pipes were employed, and the oil would not take above a fourth of the space occupied by coals. He recommends that it be applied at once as auxiliary to coal, by throwing jets over the burning mass, but contemplates, eventually, upright tubular boilers, the liquid fuel to be supplied as fast as it can be converted into flame. Of course, the North American oil springs are another source of supply.—*Am. Drug. Circular*, June, 1864, from the *London Times*.

### THE CENSUS RETURNS RELATING TO MEDICINE AND PHARMACY IN ENGLAND.

The present population of England and Wales in round numbers is twenty millions, and to minister to the medical wants of this population it appears that there are 38,441 persons engaged, or preparing to engage, in different departments of the practice of medicine. Thus the Registrar General in his report states:

"The medical order comprises 38,441 persons, of whom 35,995 are men and 2,446 are women; 14,415 physicians, surgeons, and apothecaries, are at the head of the list; 3,566 medical assistants and students, 1,567 dentists, and 16,026 chemists and druggists, including apprentices and assistants (3,388 of the age 10-20), follow. Then there are of men cuppers 10, officers of medical societies and agents 21, corn-cutters 56, professors of hydropathy and homœopathy 27, herb doctors and patent medicine venders 92, 82 medical botanists, 50 galvanists, 12 mesmerists, 21 bone-setters, 22 quack doctors, so returned, and 2 cancer doctors, besides others. The women consist chiefly of druggists, 388, and midwives, 1,913."

It thus appears that in England and Wales, with a population of twenty millions, there are sixteen thousand chemists and druggists of all sorts, including apprentices and assistants. The returns do not indicate what proportion of these are engaged in business on their own account, but they classify them according to their ages, and we thus find that of the 16,000 there are only 12,638 of the ages of 20 years and upwards. There are, therefore, 3,388 who are under twenty years of age, and who no doubt constitute the class of apprentices. Of the 12,638 persons of 20 years of age and upwards who are engaged in the practice of pharmacy, a large proportion occupy the position of assistants. Although the census returns afford us no means of showing exactly how many are principals and how many assistants, yet we may form a pretty good estimate of this by referring to the statistics of such a place as London. Mr. Coke, one of the compilers of the "statistical charts of the population," in his very useful and compendious tables, has calculated the average number of the population in London to every chemist and druggist, and this shows that there is one chemist and

druggist to 3,505 of the population. If the same proportions exist throughout the country, we should thus get 5,700 as the number of chemists and druggists for England and Wales. We may put them at 6,000, and then we should have equal numbers of principals and assistants or apprentices, of 20 years of age and upwards.

Referring back to the census returns of 1851, we find that the total number of chemists and druggists, including apprentices and assistants, was then 14,039, of whom 3,193 were under 20 years of age, leaving 10,846 of and above that age. The increase in the number of chemists in the 10 years from 1851 to 1861, taking those of 20 years of age and upwards, has been at the rate of 17 per cent., while the increase in the population has been at the rate of only 12 per cent. This is worthy of remark, especially as it appears that little or no increase has taken place in the class of medical practitioners. According to the returns, physicians, surgeons, and other medical men, including students and assistants, were 19,190 in 1851, and they were only 19,548 in 1861.—*American Druggist's Circular*, June, 1864.

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#### PREPARATION OF PHYSOSTIGMIN.

BY JOBST & HESSE.

J. Jobst and O. Hesse, in a paper on "The Calabar Bean," in the *Annalen der Chemie und Pharm.*, describe the preparation of this powerfully poisonous principle, (which they have found only in the cotyledons of the bean,) from the strong alcoholic extract, as follows:

"The extract is dissolved in a little cold water, and calcined magnesia is added until its acid reaction disappears, and a brown color is produced. The liquid is then evaporated by gentle warmth, nearly to dryness, when the residue, still moist, is placed upon white filtering paper, and agitated in a suitable vessel with ether, until the brown color of the paper entirely vanishes, and the ethereal liquid ceases to yield the alkaloid with acids. The collected ethereal solutions are then filtered and agitated with a few drops of very dilute sulphuric acid, whereupon they separate into two liquids, the upper one of



which contains a colorless, inactive, ethereal oil, while the other, of a dark red color, is an aqueous solution of the sulphate of physostigmin. The latter, carefully separated by a pipette from the ether, is precipitated with magnesia, and the alkaloid extracted by the smallest possible quantity of ether: finally the ethereal solution is evaporated to dryness.

Physostigmin is thus obtained as a brownish-yellow amorphous mass, appearing in the first place in oily drops. It is rather easily soluble in ammonia, solution of soda, ether, benzine and alcohol; less soluble in cold water. It is completely removed from its ethereal solution by animal charcoal. The aqueous solution possesses a slightly burning taste, is decidedly alkaline, and gives with the iodo-hydrargyrate of potassium a rich kermes-colored precipitate, and with chloride of iron a precipitate of hydrated oxide of iron. Heated with caustic potassa it yields strongly alkaline vapors. Acids dissolve it very readily, and afford solutions which are mostly of a dark red, seldom of a dark blue color, which become colored more or less by sulphuretted hydrogen.

The muriate, sulphate, and acetate of physostigmin have been obtained so far only as red amorphous masses, which are readily soluble in water and alcohol.

The salts of physostigmin gave with tannic acid a considerable amount of a reddish white, amorphous, flocculent precipitate, soluble with difficulty in hydrochloric acid; with chloride of platina, a light yellow amorphous precipitate, slightly soluble in hydrochloric acid and boiling water; with chloride of gold, a blue precipitate in large amount: after a short time the gold separated, while the solution became of a purple red color. Sulphuretted hydrogen decolorized the solution. With bichloride mercury, a reddish white amorphous precipitate, slightly soluble in hydrochloric acid.

The extremely small amount of alkaloid obtained from 21 beans precluded any analysis of it.

By experiments upon rabbits, we have ascertained that physostigmin is the active principle of the bean. Two drops of the aqueous solution of the alkaloid, placed in the eye, caused the pupil to contract in about ten minutes to  $\frac{1}{20}$ th its natural size, and it remained in this condition nearly an hour. After five or

six hours it regained its usual dimensions. Taken inwardly, physostigmin approaches in activity the most poisonous of the cyanogen compounds. To a strong, lively rabbit was administered a freshly prepared solution of the chloride of the alkaloid, which had been previously neutralized with ammonia. The amount of the alkaloid used corresponded nearly to that contained in one bean. Five minutes after swallowing the poison the rabbit fell down, remained *almost motionless*, and died in about twenty-five minutes.

We should not omit to mention that physostigmin acts upon the eye even of the dead body, if too long a time has not elapsed after death. We tried some experiments one hour after the death of an animal. We placed two drops of the aqueous solution of physostigmin into the eye of a rabbit which had been killed without the use of this poison, in consequence of which the pupil contracted to  $\frac{1}{2}$  its size (compared with the other eye), and remained in this condition. On the other hand, we found that in the eye of an animal killed by physostigmin no contraction took place, while in another, poisoned by cyanide of potassium, a small contraction was apparent, but which soon disappeared.

We may remark that for medicinal purposes it is important to make use of the alcoholic extract of the bean, instead of the pure alkaloid, since the latter, both in its pure state and in combination with acids other than that of the bean, readily undergoes decomposition.—*Wittstein's Vierteljahresschrift Ph. Bd. xiii.* G. J. S.

[The article at page 365 of this number was printed before we received Wittstein. This translation is inserted as giving a clearer account of the chemistry of the subject.—ED. AM. JOUR. PHARM.]

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#### SALICIN IN THE URINE.

Dr. Landeren has found that when salicin is administered in considerable doses it passes away in the urine unchanged, and can be easily separated from the evaporated urine by means of alcohol.—*Lond. Chem. News*, April 23, 1864, from *Archiv der Pharm.*, bd. c. xvi., s. 197.

## THE MAGNESIAN LIGHT.

Photographers are indebted to the perseverance of M. Sonstadt for the removal of a great obstacle. Every one knows the difficulty which has hitherto been experienced in getting a powerfully actinic artificial light. Such a light is, however, furnished by the combustion of the metal magnesium, and, thanks to M. Sonstadt, this metal is now procurable at a price which makes it available for practical purposes.

Magnesium is an easily-inflammable metal. A wire of considerable thickness can be ignited in the flame of a candle, and the light evolved by the combustion is of great intensity. It has been ascertained that a wire of 0.297 millimetre diameter will give as much light as twenty-four stearine candles of five to the pound. The powerfully actinic character of the light has been recently demonstrated by Mr. Brothers, of Manchester, and Mr. Sydney Smith, both of whom have produced good pictures by its use.

The metal is neither ductile nor very malleable. It cannot be drawn, but by employing a method devised by Dr. Matthiesen, it can be forced in a softened state through a small opening in an iron cylinder, and thus strands of wire of considerable length can be formed. The wire has been found to burn more steadily when three or four strands are twisted into a rope; and a simple clockwork arrangement will deliver such a rope to a spirit or oil lamp, in the flame of which it may be burned.

We look for important results from the use of this light. The opportunities for its use are numerous; and we may expect our collections to be soon enriched with pictures of objects hitherto shut out from photographers.

Some are talking wildly of "night pictures," as though they expected, by means of magnetism, to obtain a picture of the gloomy effects of midnight on a scene. The principal use of the light will, of course, be for dark interiors; and we hope soon to see the magnificent grottoes of Adelsburg and Antiparos—which the pencil is as powerless to draw as the unaided camera to depict—revealed as brightly as the caverns in the

glaciers, so well known to the photographers. Another Frith may also show us the wonderful passages in the interior of the Pyramids more clearly than they have ever been seen by the traveller with the help of the two or three candles which light his way through the dark labyrinth, and enable us at our own firesides to gaze with awe on the vast range of subterranean tombs at Serapeum. All these and many more objects are now open to an enterprising man, who will, no doubt, soon be found to avail himself of them.—*Chemical News, London, April 9th, 1864.*

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#### RESPIRATION OF FRUITS.

M. Cahours has made an examination of the respiration of fruits; he considers that the fruit is one of the most important organs of vegetables, and that the examination of respiration should be by no means confined to the green part of the plant. He has endeavored to study the proportion of gases contained in the parenchyma of the pericarp and their composition; the action of fruit upon the gas of respiration, *i.e.*, oxygen, whether alone or mixed with nitrogen; the action upon the same gas of each of the envelopes of the fruit and of its fleshy part when it exists. It was found that apples, oranges, citrons, in a state of maturity, placed under bell jars containing oxygen, or mixtures of oxygen with nitrogen, consumed a quantity of oxygen, and furnished an equal amount of carbonic acid, the proportion being greater in diffuse light than in darkness. It is effected gradually up to a certain point, beyond which it augments considerably, and the internal face of the skin presents some alteration. The amount of carbonic acid produced increases with the temperature. The fruit acts in the same manner during the time elapsing between its losing its green color and its obtaining its maturity, and that of its obtaining its maturity and of its commencement of decay; but as soon as this has once commenced the amount increases rapidly. Determinations were made of the proportions of gases contained in the juices. To accomplish this, the fruit was squeezed under mercury, and the juice collected in a flask, to which was afterwards adapted a tube by a cork, but it was found that the same result was ob-

tained if the juices were expressed in an ordinary press and afterwards placed in vessels. The gases were expelled by ebullition. Oranges, citrons, pomgranates, pears, and pippins gave quantities of gas diminishing in the order of the names; the gas consisted of carbonic acid and nitrogen in various proportions, but no oxygen, hydrogen, carbonic oxide, or carburated hydrogen was found. A ripe fruit enclosed in air was found, to absorb hydrogen very rapidly, and if allowed to remain until it became soft, the juice was found to contain a very large quantity of gas rich in carbonic acid, the air in which it was enclosed containing carbonic acid also. It is intended to examine the gases contained in the juice from the commencement of development to the time when it has attained its complete maturity.—*Chem. News, London, April 9, 1864.*

## ON THE ALCOHOLIC FERMENTATION.

BY M. BECHAMP.

The author remarks that two orders of ferments exist—one soluble, and therefore not organized, of which diastase may be taken as the type, the other organised, and therefore insoluble. The action of the former is invariable and specific; that of the latter, in a chemical point of view, is essentially variable, like that of all organized beings. The so-called fermentation of cane sugar set up by beer yeast is thus explained: The yeast plant first of all transforms cane sugar into glucose outside itself by means of a product which it contains ready formed in its organism, and which the author calls *zymase*; the plant then absorbs the glucose, digests and assimilates it, grows and multiplies, and finally throws off the used parts of its tissues in the form of the numerous compounds known as the products of fermentation, just as human beings throw out their waste in the form of urea, &c. According to this theory the alcohol, &c., must come from the yeast, and should be obtained from yeast perfectly free from glucose, which the author's experiments prove does in fact furnish alcohol. M. Béchamp found also that the *Mycoderma Aceti* in contact with cane sugar yielded alcohol, which it is thus seen may be formed without sugar by yeast, and with sugar by another organism similar to

yeast. Hence it is clearly impossible at present to express the so called fermentation changes by an equation. The author considers them as a series of transformations which take place simultaneously or consecutively, and which may some day be individually explained by an equation comparable to that which expresses the change in starch under the influence of diastase. —*Chemical News, London, April 16th, 1864.*

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A METHOD FOR PRESERVING THE COLORING MATTER OF  
LITMUS.

BY DR. VOGEL.

It is well known that litmus tincture so frequently used in analytical researches, alters progressively, even in a closed vessel, and losing its blue color becomes yellowish brown. That this change of tint is the result, not of the destruction of the coloring matter, but of simple deoxidation, is shown by shaking the tincture in contact with the air, when the blue color will reappear. Litmus dye, as M. Mohr has remarked, may be conveniently preserved in open, partly-empty flasks, the mouths being lightly plugged with cotton, simply to exclude dust. The author has found, nevertheless, that litmus dye, especially in a slightly concentrated solution, becomes, after a time, turbid and reddish. The latter phenomenon is probably due to the carbonic acid of the air, for on being boiled the liquid resumes its blue color. M. Vogel now uses litmus dye immediately before each experiment, with some litmus which he has found a means of preserving unaltered, and which he dissolves in water.

The preparation of this litmus is very simple. Take 16 grammes of commercial litmus, reduce it to a fine powder and put it into a cylindrical glass phial, with 120 cube centimetres of cold distilled water, and leave for twenty-four hours, taking care to stir occasionally. As the first portion of the liquid extract will contain all the free alkali of the litmus, it should be set aside, and on the residue should be poured a fresh quantity of 120 centimetres of distilled water; it should then again be left for twenty-four hours, and shaken at intervals. Then decant a second time and divide the liquid into two equal parts,



and stir one part with a glass tube dipped in dilute nitric acid, repeating the addition of this acid by means of the tube, until the liquid becomes perfectly red. Then mix it with the other portion which has remained blue. The result is a reddish blue liquid. A litmus dye is thus obtained as neutral as possible, which must then be evaporated in a porcelain capsule, placed in a sand-bath, and kept below boiling point. There remains a granular, amorphous mass, which must be kept in a well stoppered bottle. This matter dissolves in water, leaving no residue, and gives a lighter or darker blue according to the quantity of water used, and has the advantage of furnishing a litmus dye at a moment's notice, and at any degree of concentration which may be required. If, for instance, it is desired to experiment with a standard solution, a piece of the above extract, about the size of a pin's head, put in a wine glass containing a little water, will yield a very convenient solution. This extract may be preserved in closed vessels for years without losing either its solubility or its blue color.—*Chem. News, London, April 31, 1864., from Journal de Pharmacie et de Chemie, xlv. 70. 64.*

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#### IDENTITY OF ACONELLA WITH NARCOTINA.

Having received some time ago, from my friend, Mr. H. Draper, a specimen of the alkaloid discovered by Messrs. T. and H. Smith, of Edinburgh, in *aconitum napellus*, I thought it probable that some interesting results might be obtained by submitting a solution of the alkaloid to the action of polarised light. My object was to compare the change in the plane of polarization of a ray, produced by transmission through a tube filled with this solution, with the change similarly produced by a solution of narcotina. This I was enabled to do with very great accuracy by means of an instrument which I described at a meeting of the Royal Irish Academy in January, 1863.

The experiment was made as follows:—

1. I dissolved 2.95 gr. of aconella in  $1\frac{1}{2}$  cubic inches of chloroform, and determined the rotatory power of the solution. I then made a solution of narcotina of the same strength, and

measured its rotatory power in the same way. Had these powers differed from each other by the  $\frac{1}{50}$ th part, I could not have failed to see that they were unequal. No difference, however, could be detected.

2. Knowing the rotation produced by a solution of narcotina to be reversed by the addition of an acid, I was anxious to ascertain whether the same were true of a solution of aconella. In this experiment I was obliged to use as the solvent rectified spirit, inasmuch as the water contained in the dilute acid which I employed would have rendered the chloroform turbid. This made the experiment more difficult, narcotine being very sparingly soluble in spirit. In fact, I was with difficulty able to dissolve one grain of either substance in a cubic inch of cold spirit.

Having made two similar solutions of aconella and narcotina, I measured their rotatory powers before and after the addition of an acid. The results were as follows:—

a. In both cases the rotation was reversed.

b. Working by  $m$ , the ratio of the left-handed rotation produced by the solution of aconella to the right-handed rotation produced by the same solution when acidulated, and by  $m'$ , the same ratio for narcotina, I found—

$$\frac{m}{m'} = 1.02.$$

The acid used was hydrochloric, and was added in excess; the same quantity, of course, being used for each solution.

These results seem to leave little doubt of the identity of aconella with narcotina. I am, &c.

JOHN H. JELLETT,

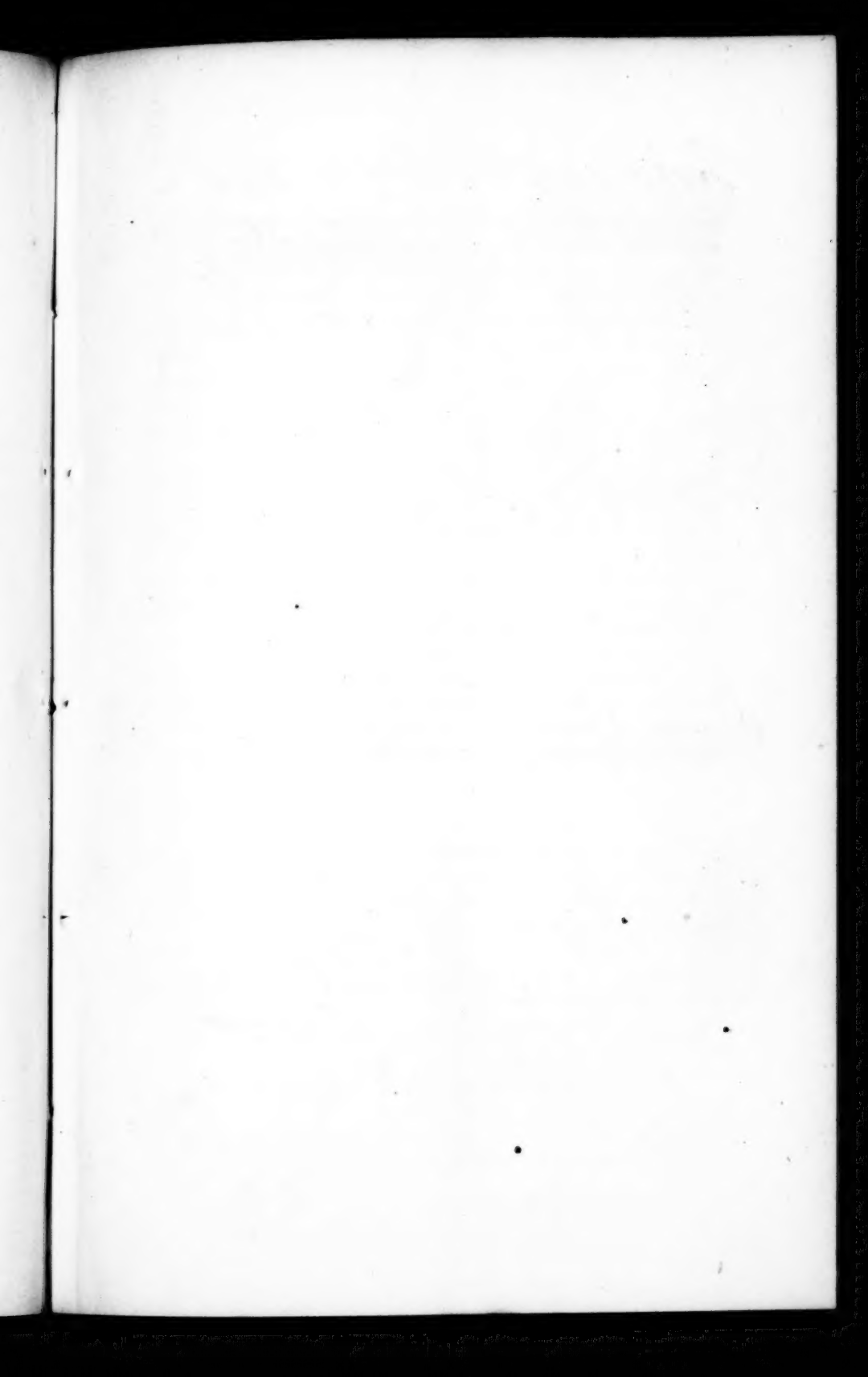
Professor of Natural Philosophy to the University of Dublin.  
Trinity College, Dublin, April, 26.

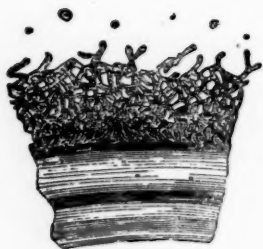
*Chemical News, London, April 30th, 1864.*

#### SOME CURIOUS PROPERTIES OF OXIDE OF SILVER.

By M. BOETTGER.

M. Boettger has remarked that oxide of silver yields its oxygen to combustible matters quite as readily as does peroxide

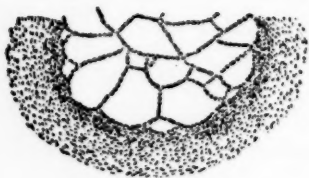




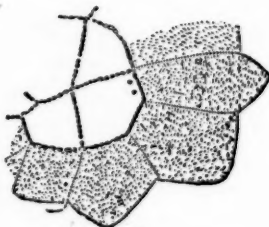
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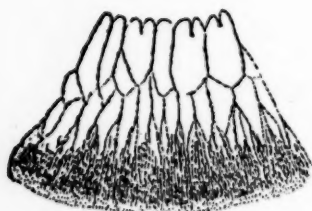
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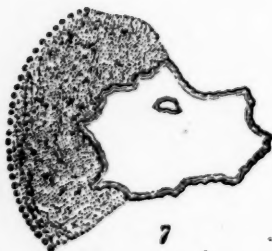
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EXAMPLES OF THE COHESION FIGURES OF LIQUIDS.

From Pharmaceutical Journal, April, 1864.

(See pages 249 and 343 Amer. Jour. Ph., 1864.)

of lead  $\text{PbO}_2$ , which, on account of this property is very largely employed in the manufacture of chemical matches.

A very dry mixture of about two parts of oxide of silver and one of sulphur ignites by friction in a mortar, or even between folds of paper. It makes no difference if the antimony compound is replaced by black sulphide of antimony, realgar, or orpiment.

The same thus occurs with amorphous phosphorus as with tannin. Gallic acid does not induce combustion.

A drop of phenic acid or creosote poured on very dry oxide of silver causes an instantaneous flame.

Flour of sulphur also ignites when triturated with this oxide; selenium the same.—*Chem. News, London, May 7, 1864, from Journ. für Prakt. Chemie, xc., 32.*

#### FURTHER REMARKS ON THE COHESION FIGURES OF LIQUIDS.

BY CHARLES TOMLINSON.

Lecturer on Science, King's College School, London.

A wish having been expressed that some of the diagrams of cohesion figures, exhibited during the reading of my paper on the 3d of February last, should be reduced and engraved on wood for insertion in the Journal, I think it due to the Society to make a few additional remarks in connection with these figures, which, as now presented, bear about the same relation to the originals as an engraving of a rainbow does to the real object. But although the exquisite beauty and harmony of color of some of these figures is thereby lost, yet a certain rough idea is thus given of their form and outline, so that any one working on this subject for the first time may get a notion of the kind of form he has to expect.

After the reading of my paper, a number of questions were put as to the variation of the figure by changing the surface, etc., and I stated that water seems, in all respects, to be best adapted for the exhibition of these figures. In a paper published in the "Philosophical Magazine" for March, 1862, some particulars are stated respecting variations in the figures arising from changes in the adhesion surface. Thus, a drop of water

gently delivered to the surface of sulphuric acid from the end of a pipette, flattens down into a well-defined disk about the size of a shilling, marked with radial lines; these disappear at the centre, while fragments remain for some seconds, near the circumference. Alcohol, ether, benzole, etc., on sulphuric acid give striking figures, showing how remarkable is the change when the adhesive force of the surface is varied by the substitution of some other liquid for water.

When acetic acid is used as the adhesive surface, a new set of figures is obtained. Thus, oil of camphor, which on water forms a large well-developed film, produces only a small disk on acetic acid (sp. gr. 1.045), which disk sails about with considerable agitation, throwing off numerous globules. Oil of lavender also forms a small disk, which gathers itself up with strange contortions, and illustrates in its own way the struggle that is going on between cohesion and adhesion.

A question was also asked respecting cod-liver oil, when I stated that a specimen (A), supplied to me as pure, gave a certain figure; that a specimen (B) purchased at a shop gave another figure; but that on mixing two-thirds of common fish oil with one-third of A, I obtained a figure almost identical with that given by B.

The first in the accompanying page of engravings is a portion of the figure of castor oil. Of course it will be understood that all these figures are complete disks or circles, of which portions only are here represented. They are produced on the surface of water contained in a shallow glass about four inches in diameter.\* The following experiments were made on the 10th and 11th of March in these new glasses. They were not made under very favorable circumstances, as the temperature of the room was under  $50^{\circ}$ ; whereas it should not have been less than

\* I have lately ordered a number of glasses resembling large claret-glasses; each glass stands on a wide foot, and the stem is rather long, for the convenience of handling; so that the hand need never be brought into contact with the inner surface of the glass. After an experiment, a jet of water from a tap will often get rid of all traces of the oil of a former experiment. Should it not do so, the caustic potash solution must be used; and should this fail, sulphuric acid must be resorted to. A glass is left at the Society's house, for inspection by members.



about  $60^{\circ}$ . Two specimens of East India castor oil, supplied by an importer, were tried. The first, a colorless, viscid oil, gave a good figure, though small, probably due to the low temperature. The second, which had a slight tinge of brown, gave a good figure, rather larger than the first. Two other oils from the same house also furnished capital figures.

Three other specimens were furnished by Messrs. Baiss, Brothers. The first, East Indian, a bland, viscid, colorless oil, produced an admirable figure. The second, Italian, prepared "from the finest decorticated seeds," was a sweet, bland oil, and gave even a still finer figure, the colored rings being very persistent. The third, which has been in my possession nearly three years, and produced the figure from which my description and large diagram were taken, is still as good as ever. An oil, bought about the same time at a druggist's, produced a figure by no means so good; it did not open so freely, nor were the colors so bright as with the finest oils, but the residual figure was good, and I am not able to say but that it was a pure oil.

A specimen from the Jamaica Court of the International Exhibition was of a yellow-brownish color; the taste rather acrid. The colored rings of the figure were finer than in the former specimens, but the lace-like border was not so well developed, and the perforations were smaller.

Another specimen from the Italian Court of the International Exhibition, gave an admirable figure; it opened well with very persistent colors. The silvery corona also opened into innumerable small well-shaped circular holes before the lace-like pattern was developed. The outer colored rings were also perforated.

A specimen from the India Museum, a colorless oil, gave an exquisite figure: another, from the same source, an opaque specimen of a yellowish color, gave a very small figure, only about half the usual size; the residual figure was not like that of the other specimens, and it soon gathered itself up into a small disk.

I am not sufficiently acquainted with the commercial treatment of castor oil to make any remarks on the change of figure likely to arise therefrom, but I give these details respecting a dozen specimens from different parts of the world to show how

constant is their behaviour in the production of a characteristic cohesion-figure.

Fig. 8 is a portion of the Balsam of Copaiba figure. I had only three specimens of this balsam to operate on. The first, which is two or three years old, from a wholesale house in the city, gives a splendid figure, consisting of large iridescent disks apparently growing out from under each other and quickly subsiding into a colorless disk with a sharp well-defined edge, just within which appears a string of very minute bosses, which it requires a sharp eye to detect. In the course of ten or fifteen minutes the film does not open into holes, as many films do, but becomes dotted over with pit-like depressions, which enlarge, and gradually the base of each pit opens into a minute network. These particulars I did not stop to describe at the meeting, but they are given in my original description of the figure.

A second specimen, of a brownish color, gave a very good figure, though not quite so large as that of the first, but it behaved in all respects like it. A third specimen, much more fluid than the above,\* shot out rapidly with much less development of color, and often without any color at all. The film was large, the boss at the edge larger and flatter than in the two former specimens, and not so well defined. A fourth was a specimen of the essential oil of copaiba. It opened with a sudden flash of colored rings, forming a colorless disk over the whole surface with no bosses at the edge.

On thinning down the second specimen with oil of turpentine a colorless film was produced similar to that of the third.

The second specimen was also mixed with  $\frac{1}{3}$ ,  $\frac{1}{2}$ , and nearly  $\frac{3}{4}$  castor oil, (No. 1 castor oil in my twelve specimens being used), and in all cases a film entirely devoid of color was produced. The splendid iridescent disks of the balsam, and the rainbow-rings of the castor were entirely absent in the mixture of the two, in consequence of the increased thickness of the resulting

\* The specimens Nos. 2 and 3 were in long narrow bottles, nearly full. A rough measure may be given of their comparative viscosity when it is stated that on inverting No. 2, the bubble of air under the cork reached the other end while 8 was counted; in No. 3 it travelled through the liquid while counting 2.

film. The mixtures were made in a test-tube held in warm water, and stirred with a glass rod.

Fig. 2 is a portion of the figure of a sample of croton oil, of a brownish-amber color: this opened into splendid rings, which quickly disappeared, when the film retreated upon itself, leaving a minute spray of oil. Another specimen which I have had by me about two years, opened with a fine display of rings, and a corona which formed a large perforated pattern, when the film gathered itself up, and left a train of oil behind. The figure was like that of the first, only in the gathering up, the edge of the film was torn away. A specimen from the Dutch court of the International Exhibition, probably from Java, flashed out into a small figure with iridescent rings, and immediately retreated upon itself. A fourth, from the India Museum, of a light amber color, required to be warmed. It formed a remarkable and beautiful figure, but the display of the usual phenomena was arrested by chilling, a dull frosty silvery appearance coming over the figure, which though very beautiful, prevented the film from telling its history. This oil set and became opaque a little below  $50^{\circ}$  F. A fifth specimen purchased by me seven or eight years ago in Prussia, gave a very good figure.

Figs. 3 and 4 are portions of the figures of olive oil. Fig. 3 is from a specimen marked "extra sublime," Fig. 4 from a specimen marked "Tuscany, fine." The enormous demand for olive oil offers a great temptation to the use of cheaper oils. In this country the oil of sessame seed is used either instead of olive oil or for mixing with it, while in France poppy-seed oil is largely employed for the purpose. Figures of these are given, Fig. 5 being that of sessame, and Fig. 6 that of poppy.\* These oils, together with lard oil, Fig. 7, are also used for mixing with some of the medicinal oils.

A good deal of interest is just now felt respecting linseed oil. I have lately performed a number of experiments with it, an account of which I must reserve until the Journal can better afford space for such minute details.

\* The experiments which furnished these figures were performed in winter in a warm room, and the oils had to be warmed before they could be used.

I may, however, remark in conclusion that the greatest precaution must be taken in ensuring the purity of the glasses used in obtaining cohesion-figures. I have repeatedly found that after glasses have been used with fatty oils they produce nothing but failures, until they have been well washed with caustic potash or sulphuric acid. There may be cases where spirits of wine will be found more convenient than potash, especially in the case of some of the essential oils which do not readily saponify.

P. S.—Since writing the above, I have made some inquiries respecting the commercial treatment of one or two of the oils operated on, and I have also visited the laboratory of a wholesale druggist, where castor oil, as imported, is purified by filtration through bags at a steam heat.

What is called "English croton oil" is pressed in this country from imported seeds. Very little oil is so made at present, on account of the trouble in preparing it. There is much difference in the appearance and character of samples, even from the same case or package. One will remain fluid at a low temperature, and another will set speedily into a pasty mass. This may be partly due to the mode of pressing, whether cold or hot, as some oils pressed hot from the seeds or nuts will be harder than oil pressed cold from similar seeds. This has been proved by careful experiments on cocoa-nut oil. It is believed also that some croton is made by pressure and other samples by boiling the seeds which have been first stripped of their outer skin or husk. This may affect considerably both the melting-point of the oil, and also its chemical character, since resinous substances may be brought out in one case and not in another. Similar differences as to melting-points are found in castor oils, and it is not always easy to equallize them even by filtration at the same temperature, as some oils will carry with them more stearine than others. This, my informant knows to be the case, from his own experience in oils. If two oils were cooled and filtered alike, one of which is quite neutral, and the other partly acidified, the latter would be more fluid after filtration than the other. The neutral stearines do not crystallize freely like the acid hard fats. They usually form masses of fine hair-like crystals, which do not separate readily from the oily part, so that a certain proportion will pass through with the oil. The

The acid fats crystallize out in the form of hard plates or concretions, which bear handling without breaking down, and can be completely separated by filtration.

Again, if two oils pressed from the seeds were packed, one quite clean, and the other more or less contaminated with gum or mucilage, the latter would become more or less acidified, the gum, etc., apparently fermenting, and then setting up an acidifying action in the oil. This may explain some of the differences in the working and character of oils.

Such being the accidents to which commercial oils are liable, I cannot wonder at variations in their cohesion figures, but I do very much wonder that twelve different samples of castor oil should have given figures so much alike as in every case to enable a practised operator to identify the oil, and also, in the case of four specimens of croton oil, one of them solid at ordinary temperatures, all the figures should have a resemblance sufficient for their identification.—*Pharm. Jour.*, London, April, 1864.

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ON WRIGHTINA; AN ALKALOID CONTAINED IN THE SEEDS  
OF WRIGHTIA ANTIDYSENTERICA.

BY JOHN STENHOUSE, LL.D., F.R.S.

The *Nerium antidysentericum* of Linnæus, *Wrightia antidysenterica* of Robert Brown and modern botanists, is a tree belonging to the order *Apocynaceæ*, indigenous to various parts of India, and occurring also in Ceylon. Under the name of *Conessi Bark*, or the Malay name of *Codago-pala*, its bark was introduced into Europe about the middle of the last century as a valuable remedy in dysentery, diarrhœa, and fever, but it apparently soon fell into disuse, and is now almost forgotten. In India, however, it still maintains its reputation, at least among the native physicians. The seeds of the tree, called in Hindustanee *Inderjow*, and in Arabic *Lissan al asafeer* (literally, birds' tongues), are reputed to resemble the bark in their medicinal properties. Mr. Waring, of Travancore, in a recent essay "On the Principal Indigenous Tonics of India," states that *Wrightia* seeds are reckoned serviceable in dysentery, diarrhœa, fevers, flatulence, bilious affections, etc. In the treat-

ment of hæmorrhoids they are given in the form of decoction made with milk, and regarded as most efficacious.

I am indebted to Mr. Daniel Hanbury for the above description, and also for a quantity of the seeds.

The seeds, which contain a large quantity of a fixed oil, were reduced to a coarse powder by pounding,—an operation which is accomplished with some difficulty, owing to their greasy nature. The pounded seeds were then placed in a displacement apparatus and treated with a considerable quantity of cold bisulphide of carbon, in order to remove the fatty matter. The seeds were then heated in an open vessel until the mechanically-contained bisulphide of carbon was driven off, and they were afterwards extracted with boiling spirit of wine. The fatty matter which is extracted by sulphide of carbon from *Wrightia seeds*, and which is present in large quantity, is a fixed oil, which does not solidify at a temperature considerably below 32° F. When digested with caustic alkalies it is slowly decomposed, giving a solution of soap, from which acids precipitate a fat becoming semisolid when cold.

After the alcohol had been removed by distillation from the alcoholic extract of the seeds, prepared in the manner described, the residue, which consisted chiefly of crude wrightine, contaminated, however, with fatty matters, gum, etc., was digested with a small quantity of dilute hydrochloric acid, and filtered. The clear solution, if tolerably concentrated, when treated with ammonia or carbonate of soda, yielded an abundant flocculent precipitate, the solution at the same time becoming of a deep green color. The wrightine was collected on a filter and washed with cold water. When ignited with soda-lime it evolves alkaline vapors and a basic oil, which solidifies to a resin on cooling.

Wrightine is moderately soluble in boiling water and in boiling spirit of wine, and but slightly so in ether or bisulphide of carbon. I have not succeeded in obtaining it, or any of its salts, in a crystalline state.

Wrightine readily dissolves in dilute sulphuric, nitric, hydrochloric, oxalic, or acetic acids; but the solutions, however highly concentrated, only yield a resinous deposit, without the slightest trace of crystallization.



Both wrightine and its salts have an extremely persistent bitter taste.

When digested with strong nitric acid it readily dissolves, giving off red fumes, and becoming oxidized into oxalic acid without the formation of any picric or similar acid.

Decoction of galls produces an abundant flocculent precipitate in a solution of wrightine, in acetic acid; this precipitate is soluble in hydrochloric acid.

Bichloride of platinum in solutions of wrightine in hydrochloric acid, gives a pale yellow precipitate, which is not crystalline.

Terchloride of gold a similar precipitate, only of a somewhat paler color.

Perchloride of mercury in solutions of wrightine produces an abundant white flocculent precipitate. When the pounded seeds are boiled for some time with very dilute sulphuric acid, and rapidly filtered through a bag filter, the solution deposits on cooling a flocculent precipitate, which is difficult to collect, as it soon stops up the pores of the filter. On heating this precipitate after it has been freed from sulphuric acid by washing with cold water, it chars and burns, evolving an odor similar to that of burnt starch.

It is insoluble in spirit of wine, but soluble in dilute sulphuric acid, from which it again separates on cooling.—*Pharm. Jour., London, April, 1864.*

#### PHARMACY IN JAMAICA

We extract the following from the *Jamaica Guardian* of January 8, 1864:—

“Several parties have applied to us to know what are the provisions of the Bill which has been introduced into the House of Assembly by the Government to provide for the registration of chemists and druggists in this island, we take the earliest possible opportunity of giving a synopsis of the measure. The first clause provides that, upon the passing of the Act, the Island Secretary shall be the registrar, and the office of enrolment the registry office, of duly qualified chemists and druggists. The third enacts that every person who, having ob-

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tained a certificate of his competency to compound and dispense medicines; actually compounded and dispensed medicines and drugs as a chemist and druggist in this island previous to the passing of the Act, shall, on payment of a fee of ten shillings to the registrar, and production to him of such certificate, and a declaration, or of a declaration where the certificate has been lost or cannot be found, according to a form set forth in the Act, signed and declared to by him, be entitled to be registered as a duly qualified chemist and druggist. The fourth clause is to the effect that it shall be lawful for any two duly qualified and registered medical practitioners in this island, on the application of any person who may have served an apprenticeship of three years to a duly qualified and registered practitioner of medicine and surgery in this island, and who is desirous of being certificated to act as a druggist, to examine such person touching his qualifications to act as such, and, upon being satisfied thereof, to grant to such person, under their hands and seals, a certificate of his qualification to compound and dispense medicines, drugs, and chemicals, which certificate shall bear a stamp of twenty shillings; and such person shall record the certificate in the office of enrolments in this island, and be entitled upon doing that, and that upon the payment of a fee of ten shillings to the registrar, to be registered as a duly qualified chemist and druggist. The fifth clause provides that after the passing of the Act no person shall presume to compound and dispense any medicines, drugs, and chemicals as a druggist, or in any manner to act as such within this island, without having first duly recorded in the manner aforesaid the certificate he may be possessed of, and being registered according to the provisions of the Act. The following are the remaining clauses of the Bill, *verbatim* :—

“Sixth.—Any person who shall, after the passing of this Act, pretend to be, or take or use the name of druggist, or any name or description implying that he is a registered druggist under the Act, or shall dispense drugs and charge for the same, even though the money has not been received, shall, upon a summary conviction before any two justices of the peace, pay a fine not exceeding [*ten*] pounds; but nothing in this act contained shall be construed to extend to prevent any person from vending patent medicines without being registered as a druggist.

"Seventh.—The registrar shall, on the (first) of (July), one thousand eight hundred and sixty (four), and (first) day of (January), one thousand eight hundred and sixty (five), and on every succeeding (first) day of (July) and (January), or within (thirty) days thereafter, cause to be published in the 'Jamaica Gazette,' by authority, a list, signed by him, of the names, in alphabetical order, according to their surnames, of the several chemists and druggists on the register on every such (first) day of (July) and (first) day of (January), under a penalty of (twenty) shillings for every neglect.

"Eighth.—A copy of the 'Jamaica Gazette,' by authority, containing a list of the names of chemists and druggists, published as by this Act is directed, shall be evidence in all courts, and before all justices of the peace and others of the registration, according to the provisions of this Act, of the several persons whose names are mentioned therein.

"Ninth.—Upon the passing of this Act, the Governor shall appoint in every parish of this island one or more qualified practitioners of medicine and surgery, who shall have power and authority, and are hereby required, at reasonable and convenient times, as often as to them shall seem expedient, to enter into any shop, store, or house of any person whatsoever in which medicines, drugs, or remedies for internal or external use are kept or prepared for sale, and to search, survey, prove, and determine if the same medicines, drugs, and remedies shall be of good, sound, and wholesome quality, and cause to be burnt, or otherwise destroyed, all such medicines, drugs and remedies as they shall find false, adulterated, corrupt, or decayed; and every person who shall obstruct, or cause to be obstructed, any such authorized practitioner of medicine and surgery in the execution of his said duty, shall be subjected to a penalty not exceeding [*ten*] pounds.

"Tenth.—All persons vending poisons, or poisonous drugs, shall keep the same in a separate place, under lock and key, under the penalty of [*thirty*] pounds.

"Eleventh.—Any penalty imposed by this Act may be recovered in a summary manner before two justices of the peace of the parish or precinct wherein the penalty was incurred, and may be proceeded for and recovered or enforced under the

provisions of the thirteen Victoria, chapter thirty-five, or any Act now or hereafter to be in force relating to summary proceedings; and, when recovered, one-half thereof shall be carried to the credit of the general revenue of this island, and the other half be given to the informer or prosecutor: and such informer shall, notwithstanding, be a competent witness for the prosecution in the case.

"The measure stands for a second reading in the House, and we hope it will meet with the careful consideration which it deserves from honorable members. There can be no doubt that legislation is required in this direction, as it is notorious that there are many individuals in different parts of the island engaged in the vending of drugs who are utterly unqualified for such an occupation. We venture to say that in no country is such license permitted in this respect as is allowed in Jamaica. It is high time that some remedy to this state of things should be devised; and we trust that the 'collective wisdom' of the country will be able, without prejudice to existing interests of a legitimate character, to impose some effectual check upon the indiscriminate and careless way in which medicines are now vendcd throughout the country."—*London Pharm. Journal*, April, 1861.

#### UTILIZATION OF BRINE.

At the usual meeting of the Philosophical Society of Glasgow this week, a very important paper was read by Alexander Whitelaw, Esq., 55 Sydney Street, entitled "A Practical application of Dialysis." The paper set out with a detailed exposition of the discovery of, and experiments in, dialysis by Mr. Graham, of the Mint, after which Mr. Whitelaw stated the result of a process of his own for utilizing the brine of salted meat. When fresh meat, he said, had been sprinkled with salt for a few days, it was found swimming in brine. Fresh meat contained more than three-fourths of its weight of water, which was retained in it as in a sponge. But flesh had not the power to retain brine to that extent, and in similar circumstances it absorbed only about half as much saturated brine as of water, so that under the action of salt, flesh allowed a portion of its water to flow out. This expelled water, as might naturally be



expected, was saturated with the soluble nutritive ingredients of the flesh; it was, in fact, juice of flesh—soup, with all its valuable and restorative properties. In the large curing establishments of this city very considerable quantities of this brine were produced, and thrown away as useless. This was the material to which Mr. Whitelaw has applied the process of dialysis, and he thought with success, for the removal of the salts of the brine, and for the production, at a cheap rate, of pure fresh extract of meat. His process he stated as follows: The brine, after being filtered to free it from any particles of flesh or other mechanical impurities it might contain, was then subjected to the operation of dialysis. The vessels or bags in which he conducted the operation might be made of various materials and of many shapes; but whatever might be their material or shape, he called them “dialysers.” Such an apparatus as the following would be found to answer the purpose;—A square vat made of a framework of iron filled up with sheets of skin or parchment paper in such a way as to be water tight, and strengthened, if necessary, by stays or straps of metal. The sides, ends, and bottom being composed of this soft dialysing material, exposed a great surface to the action of the water contained in an outer vat, in which the dialyser was placed. He found a series of ox-bladders fitted with stop-cocks, or gutta percha mouth-tubes, and plugs, and hung on rods stretching across and into vats of water, a very cheap and effective arrangement. He could also employ skins of animals either as open bags or closed, and fitted with stop-cocks or bags of double cloth, with a layer of soft gelatine interspersed between them. Other arrangements would readily suggest themselves, and might be adopted according to circumstances. But supposing the bladder arrangement was taken, which he thought would be found practically the best, being cheap, easily managed, and exposing a great surface to a dialytic action. The bladders were filled with the filtered brine by means of fillers, and hung in rows on poles across, and suspended into vats of water. The water in those vats was renewed once a day, or oftener if required, and he found that actually at the end of the third or fourth day, according to the size of the bladders employed, almost all the common salt and nitre of the

brine had been removed, and that the liquid contained in the bladders was pure juice of flesh, in a fresh and wholesome condition. The juice, as obtained from the "dialysers," might now be employed in making rich soups without any further preparation, or it might be concentrated by evaporation to the state of solid extract of meat. Mr. Whitelaw, at this stage, requested a friend present to heat a portion of the juice of flesh so as to produce a soup, and he asked the members to taste it and experience the result. He also had prepared more carefully a soup from the brine, to which he directed attention. (Both were found to be very palatable.) The brine used, he continued, was from one of the most respectable curing-houses in Glasgow, and was perfectly pure and wholesome. The liquid from the dialysers might be treated in several ways. It might be evaporated in an enamelled vessel to a more or less concentrated state, or to dryness, and in these various conditions packed in tins or jars for sale. It might be concentrated at a temperature of 120 degrees, by means of a vacuum pan or other suitable contrivance, so as to retain the albumen and other matters in a soluble form. Again, the more or less concentrated liquid might be used along with flour used in the manufacture of meat biscuits. The products he had named were all highly nutritive, portable, and admirably adapted for the use of hospitals, for an army in the field, and for ships' stores. The dialysis of brine might be conducted in salt water, so as to remove the greater portion of its salt, and the process completed in a small quantity of fresh rain, or other water. In this way ships at sea might economize their brine, and so restore to the meat in a great measure the nutritive power that it had lost in the process of salting. Thus then, Mr. Whitelaw said, he obtained an extract of flesh at a cheap rate, from a hitherto waste material. Two gallons of brine yielded one pound of solid extract, containing the coagulated albumen and coloring matter. For the production of the same directly from meat, something like twenty pounds of lean beef would be required. The quantity of brine annually wasted was very great. He believed he was considerably under the truth when he said that in Glasgow alone 60,000 gallons were thrown away yearly. If they estimated one gallon as equal to seven pounds of meat in soup-

producing power, then this was equal to a yearly waste of 187 tons of meat without bone. Estimating the meat as worth sixpence per pound, this amounted to a loss of £10,472. In this way the waste over the country must, he said, be very great. In the great American curing establishments the brine wasted must be something enormous, as he found that in eight of the Federal States, 4,000,000 pigs were slaughtered and cured last season. Mr. Whitelaw concluded by quoting from from Gregory and Liebig as to the value and efficacy of extract of meat.

At the conclusion several gentlemen expressed their approval of the paper, and the desirability of such a practical application of dialysis as that described by Mr. Whitelaw.—*London Pharm Jour.*, April, 1864, from *North British Daily Mail*, Feb. 27, 1868.

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CINCHONA NEWS.

By C. W. QUIN, F. C. S.

In the *Technologist* for February there is a very interesting paper on cinchona culture in Jamaica, by Nathaniel Wilson, the island botanist. The quinine-yielding cinchonæ were introduced into the island in the autumn of 1860 by means of seeds, and by the month of October in the year following Mr. Wilson had the satisfaction of possessing over four hundred healthy young plants ready for planting out. The selection of too warm a site, however, killed nearly all of them, and it was found necessary to transplant the remainder to a much colder situation, the climate and soil of which proved to be all that could possibly be desired. Some of the plants of the *Cinchona succirubra* have attained a height of six feet, having a circumference at the base of the stem of four and a half inches. The grey barks *C. nitida* and *C. micrantha* being slower in growth have not reached so large a size. So far the experiment has proved highly successful, and Mr. Wilson states that it would be difficult to find more healthy fruit trees in the neighborhood. It is calculated that in about four or five years the plants will yield seeds; in the mean time they can be successfully propagated by cuttings and layers. It seems that the climate and soil of the higher and many of the intermediate

mountains in the island are particularly well suited for the growth and propagation of the most valuable of the cinchonæ, *C. succirubra*. The *Pharmaceutical Journal* for last month also contains several notes on the subject of the cinchonæ. A paper, read by Mr. John Eliot Howard at the January meeting of the Pharmaceutical Society, states that recent importations of Calisaya bark from Bolivia contain an unprecedented admixture of the root bark, which is, however, easily distinguished by its peculiar characteristics, more especially its curly shape. A very favorable specimen gave only from 8 to 10 parts of alkaloids per 1,000, or about one-tenth the richness of ordinary Calisaya bark. The suicidal Bolivians, who have hit on the most certain method possible of extirpating the finest species of bark from their forests, are, it appears, much disappointed at the low estimation in which the root bark is held in Europe. Mr. Howard and Professor Bentley afterwards entered into some very interesting particulars with regard to the formation of the alkaloids in the living plants, for the details of which we must refer the reader to the original paper. The same number contains the report by Mr. Howard to the Under Secretary of State for India on the bark and leaves sent home in October last from the Government Cinchona Plantations at Ootacamund by Mr. McIvor, the superintendent. In a note accompanying the bark and leaves Mr. McIvor states that they were removed from the plants during the rains, that is to say when the sap was in full flow, the object being to ascertain how far the period of the year at which the bark was gathered affected the supply of alkaloids. The plants under cultivation give unmistakable signs that they do not require so rainy a climate as they are represented to thrive under in the Andes, the grey barks, especially, having suffered from the unusually wet season. In speaking of the leaves, Mr. Howard says, "I regret to be obliged to confirm the opinion I expressed in my last, that the leaves will not supply material for the extraction of quinine." The first rough precipitation from an acid solution only amounts to 1.31 per cent. The alkaloid seems to exist in the leaves in intimate connexion with the coloring matter. The latter substance promises to be very interesting, being somewhat analogous to indigo. Its solution by reflected

light is blood red, by transmitted light a fine green. Mr. Howard expects that the investigation of this substance will throw much light on the formation of alkaloids in the plant. With the exception of the specimen of the bark of the *Cinchona Pahudiana*, the value of which as a quinine-yielding plant is questionable, all the others yielded very satisfactory results. They were all, however, in too small portions for extensive examination.

A correspondent of the Journal states that the hydrochlorates of quinine, quinidine, and cinchonine may be distinguished from the sulphates of the same alkaloid by their fusing and giving off purple fumes when heated in platinum foil. It seems that samples of the hydrochlorate of cinchonine have been lately passed off as sulphate of quinidine.

Strecker, by boiling monobrominated cinchonine with an alcoholic solution of potash, and passing through it a current of carbonic acid, has succeeded in forming a substance having precisely the same composition as quinine, but possessing different properties. It will be remembered that cinchonine differs from quinine in having two equivalents less of oxygen. The new substance which possesses the properties of an alkaloid has been called by Strecker oxycinchonine. It crystallizes in colorless plates, and differs from quinine in not giving fluorescent solutions. Its salts crystallize with difficulty, the most crystallizable being the neutral sulphate and oxalate. It remains to be seen whether its therapeutic effects are also different.—*Chemist and Druggist*, March 15th, 1864.

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#### HOW TO PRESCRIBE AND HOW TO WEIGH IN GRAINS.

Although the toils of practice have compelled us, as they have most of our readers, to look upon chemical manipulation as a thing only to be taken up on some rare occasions, yet, sitting with a good balance and set of accurate grain-weights in our study, we cannot help wondering why so many who prescribe and dispense, and why the Medical Council which issues regulations for both processes, should prefer an intricate and obscure system of weights to one that is simple and obvious at first sight to every one.

In our present remarks we confine ourselves to dispensing and prescribing; as for manufacturing, that is no business of the practitioner. The Medical Council have thought fit to give formulæ for the manufacture of drugs on the large scale, which manufacturers may laugh at or adopt, as they please; and for processes such as these, the pound, with its even binary divisions of half, quarter, eighth, etc., and the ounce, with similar divisions, may be convenient and sufficient.

But we do not prescribe pounds or ounces for our patients. *The real unit for this purpose is the grain.* Every one who prescribes knows how many grains or fractions of grains he wishes the patient to take; and whether he direct one dose or many to be made up, the necessary calculation is trivial, and involves no difficulty whatever. And it is far easier to write down any given number of grains at once, than it is to first reduce them to drachms, or fractions of drachms, or scruples.

It will be more convenient under this new system to use Arabic numerals than Roman. Most of us now write in English the directions how medicines are to be taken. We have done so, since a chemist's lad once translated "*cyath. vin. aquæ,*" as "*a glass of wine and water.*" The substitution of the Arabic numeral will be but one step towards abolishing Latin altogether, a thing which, however regretted, is inevitable.

Prescriptions are already half English. When we see "*grs. xx.,*" we are fain to advise the prescriber not to jumble Latin and English together in one phrase, but to choose whichever of the two tongues he understands best, and write wholly in that.

Suppose, then, we wish to write a prescription for eight doses, each containing eight grains of carbonate of ammonia, ten of bicarbonate of potass, and fifteen of nitrate of potass,—

R. Ammonię carb., gr. 64; potassæ bicarb., gr. 80; potassæ nitratis, gr. 120; aq. destillatæ, fl. oz, 8; m. ft. mist.

Sig.—"One fluid ounce by measure to be taken every four hours, with half a fluid ounce of lemon-juice, and the same of water."

Such a mode of prescribing quantities would answer every purpose. There could be nothing gained by writing "*gr. lxiv.,*" nor yet "*5j. et gr. iv.,*" instead of "*gr. 64,*" and so with the other quantities. To use scruples or drachms and Roman nu-



merals would be to get into a calculation for no other purpose than to get out of it again.

Suppose a man has to perform a simple chemical determination,—say, the solid contents of a decigallon of water from some water-works,—first he weighs a capsule, which equals, say, 413.98 grains; (2) after evaporating the water therein, and drying at  $250^{\circ}$ , it weighs 416.4 grains; (3) after drying still further, 416.35 grains. This number is adopted, giving as the total solid impurity, viz., the difference between the first and third weighing, multiplied by 10, as per gallon, 23.7 grains.

These results are seen at a glance. But what chemist, except his head were stuffed with straw, would write down, instead of the above figures, “Weight of capsule,  $3vj.$ ,  $\mathfrak{D}ij.$ , gr.  $xij.$ , et  $xviii.$  partes grani e centum; after evaporation,  $3vj.$ ,  $\mathfrak{D}ij.$ , gr.  $xvj.$ , et  $xxxv.$  partes grani e centum; weight of solid residue per gallon,  $\mathfrak{D}j.$ , gr.  $ij.$ , et septem partes grani e decem?”

If chemists do not vex their souls with these antique intricacies, why should we? But if the manner of expressing quantities in grains be easy, infinitely more so is the actual weighing, if, instead of the odious ‘Apothecaries’ weights, we have a set of plain grain-weights.

With the Apothecaries’ weights they give  $3ij.$ ,  $3j.$ ,  $\mathfrak{D}ij.$ ,  $3ss.$ ;  $\mathfrak{D}j.$ ,  $\mathfrak{D}ss.$ , besides grain-weights stamped to represent 6, 5, 4, 3, 2, and 1 grain.

It is practically difficult to distinguish between  $\mathfrak{D}ij.$  and  $3ss.$ , and it takes up a good deal of calculation to make up odd numbers of grains.

A box of good chemical grain-weights, on the contrary, has them in regular sets of four, out of which any combination can be made immediately by the simplest process of addition. The grain weights are made of wire, bent in such a way that each gives its value at a glance.

The highest set of weights, for hundreds of grains, is—600, 300, 200, 100. The next, for tens—60, 30, 20, 10. The third, for grains (of platinum wire)—6, 3, 2, 1. The fourth, for tenths (of platinum wire)—6, .3, .2, .1. Hundredths may be had in gold wire, but are not necessary, and tenths can seldom be wanted in dispensing.

It may be seen at a glance, first, that the series of “tens of

grains" harmonizes with 3j., 3ss., ʒj., and ʒss., if any one loves the old system and chooses to use it. Secondly, that out of the above numbers any intermediate number can be formed. And it may be added, thirdly, that the custom of putting weights into the scale-pan in regular order is useful, like all other chemical processes, as a means of teaching exactness and order.—*London Pharm. Jour.*, April, 1864, from *Med. Times and Gazette*.

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#### THE STATE OF PHARMACY IN RUSSIA AS COMPARED WITH THAT IN ENGLAND.

The condition of the pharmaceutical profession is of the greatest public importance. After the medical profession, the pharmaceutical commands the greatest consideration, not of Government alone, but also of the public at large. The science of "pharmacy" is so closely linked up with the science of medicine, that it may well be said one cannot effectually exist without the other; but at the same time, it must be understood that these professions, however intimately related, must be kept distinctly separate. The branches of science which must necessarily be known by the followers of these professions have reached such a wide-spread development, that should they continue to progress at the same rate, it will soon be impossible for *one* individual to obtain a thorough knowledge of all of them. The fact of medical men possessing a full knowledge of their profession, but devoting themselves to the study and practice of special diseases only, shows the correctness of the above assertion. This admitted, and it becomes evident that either of these professions has in itself sufficient upon which a man's whole energies should be devoted; and considering also the progress of science, and the necessity for public safety, it cannot be surprising that the feeling is daily increasing that pharmacy should be raised to a level with other professions, and *cease* to be a trade.

On the Continent, the title of "Apothecary," and the right of selling medicine, is limited to those only who have obtained the degree of "Apothecary;" and even these are bound by oath to adhere, under the penalty of being deprived of their diploma, to certain laws, the object of which is the safety of the public.

In Russia, where they have copied from Germany almost all the laws and regulations relating to learned institutions, the following system works with the greatest and most efficient success. Every one who wishes to become an "Apothecary" has to show his certificate of having passed with efficiency through the first four classes of the Government school in a certain allotted time, viz., four years. During this period the candidate will have been examined in the following subjects:—the Latin tongue, the Greek, Russian, German and French languages; arithmetic, mathematics, history, geography, and natural history.

The candidate is then admitted an apprentice in a "pharmacy" or pharmaceutical establishment, having been duly registered at the "Medical Police." During his apprenticeship he has ample opportunity of learning practically the following subjects:—

Pharmacopoeia, pharmacognosy, pharmaceutical chemistry, botany, practical dispensing, and the reading of the most abbreviated prescriptions.

At the expiration of three years he passes, at one of the University Colleges, a theoretical and practical examination of the above-named subjects. If found efficient, he attains the degree of "Subject," which entitles him to the situation of assistant. Having registered his new degree with the proper authorities, he has to serve another three years in his new post of assistant, and at the end of that time he has to study two years as pharmaceutical student in a Russian University College, and afterwards pass a very close and minute examination in the following subjects:—

Chemistry, organic and inorganic, analytical and pharmaceutical; botany, mineralogy, zoology, natural history, pharmacology, forensic medicine, and toxicology.

This examination entitles the "Subject" to the degree of "Provisor," or manager of a "Pharmacy." If a provisor writes at his examination a dissertation on some pharmaceutical subject, and is able to defend it before the Board of Examiners, he is entitled to the highest degree—that of "Magister." This degree is optional, and a "Provisor" is considered by law a pharmaceute, entitled to manage or possess a "pharmacy." In

every town in Russia there is a *limited* number of "pharmacies," and a "Provisor" must take his chance in buying the privilege, or undertaking the management of one of these places. In Odessa, for instance, a town of about 100,000 inhabitants, the number of "pharmacies" is limited to eleven, which cannot be exceeded without the sanction of the medical authorities in St. Petersburg. The responsibility of a manager rests in the observance of the following duties:—

1. Keeping a stock of all drugs fixed by the Medical Board in St. Petersburg.

2. Dispensing nothing but by the prescription of a medical man.

3. Keeping books (as prescription-book, cash-book, etc.) confirmed and registered by the Medical Police.

4. Filing and keeping the original prescriptions for a period of not less than three years.

5. Charging for medicine according to the Medical Tax-Book.

6. Keeping only Patent Medicines which have been analysed and approved by the Medical Board of St. Petersburg.

Every "Pharmacy" receives once a year an unexpected visit of the members of the Committee of the Medical Police.

The Pharmaceute, as well as the medical man, is exempt from all civil duties, taxations, and enjoys many privileges.

This system works very well, and though it is perhaps impossible to introduce it into this country, *something* might be done approaching it.

After a careful reading of the pamphlet, "*The Pharmaceutical Society of Great Britain*," published by the Society in 1863, I come to the conviction that, with a few alterations in the system carried on by the Society, and with an additional Pharmacy Act, *authorizing the sale of drugs, or the dispensing of prescriptions by those only who have passed with efficiency the "Major Examination,"* incalculable benefit would be afforded to the public. There would be a better knowledge of the profession, and the public would have greater means of safety in a most important matter of every-day life.

Should such improvements be introduced, there is little doubt the majority of the medical profession would willingly give up

the practice of selling drugs, or preparing prescriptions for their patients. And should this unjust practice not be discontinued, it might be enforced by Act of Parliament.

At all events, the time has come when the medical and pharmaceutical professions, as well as the public, see the necessity that SOMETHING MUST BE DONE; and if it must be done, the sooner the better.—CH. W. *Manchester.*

*Pharm. Jour., London, April, 1864.*

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#### NEW ALKALOID FROM THE CALABAR BEAN.

Messrs. Jobst and Hesse, of Stuttgart, have instituted a chemical examination of the Calabar bean. They found the active principle to be contained in the cotyledons only. It was obtained by treating the beans with alcohol, and then acting by means of ether on the residue left after evaporation of the alcoholic solution. The ethereal solution after evaporation left pure *physostigmine*. *Physostigmine* is a brownish-yellow mass, amorphous, and in the first instance separated in the form of oily drops. It is easily soluble in ammonia, caustic and carbonated soda, ether, benzole, and alcohol; less soluble in cold water. From the ethereal solution it is entirely precipitated by animal charcoal. The watery solution has a faintly burning taste, a clearly alkaline reaction; it gives a copious kermes-colored precipitate with biniodide of potassium, and a precipitate of hydrated oxide in solution of chloride of iron; fused with hydrate of potash, it evolves fumes which have a strongly alkaline reaction. Acids dissolve it easily, and yield solutions of salts, which have mostly a dark red, more rarely a dark blue, color. The hydrochlorate of *physostigmine* yields precipitates, with tannic acid, reddish-white; chloride of platinum, pale yellow; chloride of gold, bluish—a reduction taking place; bichloride of mercury, reddish-white. Twenty-one beans yielded only a little alkaloid. Two drops of a watery solution of the alkaloid placed on the eye caused the pupil to contract, after ten minutes, to about one-twentieth of its original diameter. In this condition it remained for an hour; after from four to six hours it had again assumed its former size. Taken internally, *physostigmine* is as poisonous as the most dangerous cyanides. The alkaloid from

one bean was given to a rabbit; five minutes afterwards it fell, remained motionless, and died twenty-five minutes later, or half an hour after the taking of the poison. Physostigmine causes contraction of the iris, even in the eye of an animal which has already been dead for some time. A rabbit's eye, treated with two drops of watery solution an hour after the animal had been killed mechanically, showed a contraction of the pupil to one-fourth of the other eye. A rabbit killed with physostigmine did not show this feature; but it was exhibited to a small degree by one which had been killed by cyanide of potassium. This shows that muscles, though dead, are yet liable to be influenced specifically, and not only by the galvanic current, but also by physostigmine.—*London Pharm. Journ.*, April, 1864, from *Ann. Chem. und Pharm.*, Jan., 1864; and *British Medical Journal*.

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#### ASAFÆTIDA IN AFFGHANISTAN.

A SUPPLEMENTARY NOTE. BY M. C. COOKE.

To what was before known with certainty of Asafætida in Afghanistan may be added the following particulars, communicated principally by Dr. Bellew, who was formerly attached to the mission to Kandahar. Some portion may be a repetition of the same facts previously obtained by other travellers, and which are hereby corroborated; for other information now communicated for the first time, Dr. Bellew is mainly responsible. This brief notice can, however, only be regarded as supplementary.

The asafætida of commerce is obtained from only one plant in Afghanistan, viz., *Narthex asafætida*. It grows wild on the hills about Herat and Furrah, and is never cultivated, though hundreds of the Kakar tribe from the Boree family, who collect the gum, remain in the deserts to tend and water the plant.

The "tear" sort is the gum resin that exudes, and dries drop by drop, from incisions around the top of the root; the "lump" sort is the gum resin as it exudes from a broad surface, as when the top of the root is sliced off. The latter sort is more frequently met with than the former, but I do not know of any difference in the qualities of the two sorts. There are several other umbelliferous plants in Afghanistan which resemble the asafæ-



tida plant in external appearance, and which also, like it, when wounded, exude a milky viscid sap, but I never heard that the sap of these plants (also gum resins) was ever collected by the natives, though the plants were very abundant, especially on the western slopes and ranges of the Sufaid Koh.

The frail vaginated stem, or the lower cluster of sheathing leaves (of the asafœtida plant)—the former belonging to old plants, and the latter to young ones,—is removed at its junction with the root, round which is dug a small trench about six inches wide and as many deep. Three or four incisions are then made around the head of the root, and fresh ones are repeated at intervals of three or four days; the sap continuing to exude for a week or fortnight, according to the calibre of the root. In all cases as soon as the incisions are made, the root head is covered over with a thick bundle of dried herbs or loose stones, as a protection against the sun; where this is not done the root withers in the first day, and little or no juice exudes. The quantity of asafœtida obtained from each root varies from a few ounces to a couple of pounds weight, according to the size of the roots, some being no bigger than a carrot, whilst others attain the thickness of a man's leg. The quality of the gum differs much, and it is always adulterated on the spot by the collectors before it enters the market. The extent of adulteration varies from one-fifth to one-third, wheat or barley-flour or powdered gypsum are the usual adulterants. The best sort, however, which is obtained solely from the leaf-bud in the centre of the root-head of the newly sprouting plant, is never adulterated, and sells at a much higher price than the other kinds. The price of the pure drug at Kandahar varies from four to seven Indian rupees per "man-i-tabriz" (about 3 lb.), and of the inferior kinds from one and a half to three and a half rupees per "man." The asafœtida is commonly used by the Mahometan population of India as a condiment in several of their dishes, and especially mixed with "dal." It is not an article of general consumption in Affghanistan, though often prescribed as a warm remedy for cold diseases by the native physicians, who also use it as a vermifuge. The fresh leaves of the plant, which have the same peculiar odor as its secretion, when cooked, are commonly used as an article of

diet by those near whose abode it grows; and the white inner part of the stem of the full-grown plant, which reaches the stature of a man, is considered a delicacy when roasted and flavored with salt and butter.

The annual value of the asafoetida trade with India is estimated in the Government Reports of the North West Provinces at about £2,200.—*London Pharm. Jour.*, May 1st 1864, from *The Technologist*.

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#### ON THE PREPARATION AND PURIFICATION OF BENZOLE.

By M. E. KOPP.

I have elsewhere mentioned the superheating process by which we have succeeded, more or less perfectly in converting the heavy tar oils, and which are frequently much charged with naphthaline, into lighting gas and volatile oils rich in benzole.

The apparatus for this transformation consists of a horizontal retort of cast iron or earthenware, so arranged that it can be heated to incipient redness by the furnace flame and gases circling round it. One extremity of the retort is formed by a cover, easily adjusted and removed, giving access to the interior, and allowing of the necessary frequent cleaning out of the retort.

At a certain distance from the other well-closed extremity is a partition half the height of the retort, intended to prevent the flow of oil outside the retort.

Beyond this partition the retort communicates with a watery chamber by means of a tube placed at the most inclined part of the side.

The lower part of the water chamber communicates by a hydraulic syphon with a waste pipe placed at its extremity, serving to collect the heavy and little volatile oils which condense in this water chamber. But the upper part of the chamber is, moreover, in communication with a good refrigerator of the usual construction, into which pass the more volatile products, which there separate into light oils, which condense, and are collected apart, and into lighting gas, which flows into a gasometer. The operation is conducted in the following manner;—

The retorts (a series of which may be placed in the same furnace, and which may communicate with the same water chamber

and the same refrigerator) having been heated to clear redness, a continuous thread of heavy oil is poured into them by means of a syphon attached to the exterior part of each retort, and terminating high up, with a funnel to receive the oil from a tap connected with the reservoir above.

As the oil flows into the retorts, it is rapidly affected by the high temperature, which modifies, at least, to a certain extent, its composition and its properties. The result is, more or less, graphitous or light charcoal, which remains in the retort, and more or less volatile oils and gaseous hydrocarbons.

As the volatile and gaseous products penetrate into the water chamber, a first separation is effected, then in this chamber are condensed the heavy and little altered oils, which must afterwards be again passed through the red hot retort; the more volatile products also traverse the refrigerator, where are condensed the light oils produced in the operation, which, rectified in an ordinary alembic, furnish light volatile colorless oils, rich in benzole.

For the more perfect purification of benzole (or benzine), I propose taking advantage of its property of solidifying under the influence of cold, taking the form of flakes, grouped like fern leaves, or in crystalline masses similar to camphor, melting only at  $8^{\circ} \cdot 5$  above  $0^{\circ}$ . For this purpose we cool the rough benzine to  $-15^{\circ}$  in M. Carré's refrigerator, strongly and rapidly press the benzine crystals still impregnated with other liquid hydrocarbides, and thus, with the greatest ease, we obtain crystalline benzine, which, again melted and once more submitted to the same treatment, gives us benzine almost chemically pure.

With such a benzine a pure nitro-benzine may be obtained, very useful in perfumery, and with which perfectly pure aniline may be prepared.

But we doubt whether, in the manufacture of artificial coloring matters, the preparation of chemically pure benzine, nitro-benzine, and aniline, is of so much practical importance as might have been expected; unless, indeed, we can at the same time offer to manufacturers toluol, nitrotoluol, toluidine, and homologous products, so that they can operate on mixtures giving the

most advantageous results as much with respect to the beauty and richness of the color as with respect to the yield.\*

After separating the benzine by congelation from light and volatile hydrocarbides, in no case must the mother liquors be mixed with the residues.

On the contrary, they must be treated as if the benzine were still present, and hence perhaps the names toluine, nitrotoluine, and commercial toluidine.

Such a separation and classification will, no doubt, facilitate the preparation and classification of anilines most suitable for various red, violet, and blue tints, and will contribute an important step to the theory of the formation of these coloring matters. —*Chem. News, London, May 14, 1864, from Moniteur Scientifique, vi., 329.*

#### BUTTER AS A REAGENT FOR COPPER AND ITS COMPOUNDS.

By E. LANCELOT, Pharmaceutist, Chatillon, (Indre.)

I take the opportunity of the Scientific Commission now meeting at the Vienne (France), to communicate to my fellow-pharmaceutists a fact which, I believe, is new to the science of chemistry, and may ultimately prove highly interesting as a question of hygiene and toxicology.

Some time ago, an inhabitant of our city had a copper hydrant put up in his yard. The inner part of the copper pipe had not been tinned, that precaution being commonly deemed superfluous.

The water supplied by this hydrant for the usual wants of the household, had never been suspected of containing noxious matter; but, one day, the lady of the house told her husband that, having left a slice of butter for several days in water drawn from the new hydrant—the water having been renewed five or six times,—she found that the immersed surface of the butter had turned quite green.

Anxious to ascertain the cause of this singular alteration, the proprietor divided a pound of butter into three equal parts, and

\* See CHEMICAL NEWS, vol. viii., p. 4 :—Dr. Hoffman's "Memoir on the necessity of Mixing Aniline and Toluidine to produce Aniline Red."

placed them separately in three different vessels. He then filled one of these with water taken from a wooden hydrant placed in his yard at some distance from that of copper; the second vessel was filled with water from the very well that supplied the copper pipe, but, from the outside of that pipe; and the third vessel contained water that had passed through the copper pipe itself.

The butter deposited in the water of the third vessel was the only one which, after two days immersion, became covered with a bluish green color, exhibiting the aspect of an hydrate of deutoxide of copper.

This piece of colored butter was handed to me by the owner, with a request to experiment chemically upon it, so as to ascertain the true nature of this coloration.

A solution of hydro sulphuric acid applied to the butter, produced at once a blackish dirty spot; and the ferro-hydrocyanate of potassa gave a crimson spot: the latter grew darker by degrees. These characteristic aspects left no doubt of the presence of copper.

Desirous of experimenting upon the very water that had imparted such a color to the butter, and also of determining what proportion of copper it might contain, I requested the owner to send me a certain quantity of that water, especially that which would be the first drawn in the morning. He sent me about three gallons of it, one quart of which was tried by means of the above mentioned reactives, and some well-known others, but without any result.

The remaining eleven quarts were reduced by evaporation to a tumbler full. Having filtered that remnant, I tried the limpid liquor: no result. I next poured on the filter—now coated with a calcareous deposit—a few drops of a reagent: again without result. Finally, I dissolved this deposit in nitric acid, and then neutralized the solution; but that was as unsuccessful as the other trials.

Now, what conclusions can be drawn from the above? Simply this: That butter may fix and reveal molecules of copper, so very minute, that they will evade the most sensitive reagents known. Another remark is, that none of the persons who had

used the water of this hydrant had ever experienced the slightest accident. Nevertheless, my experiments lead me to the following conclusion: That under certain circumstances—as, for instance, the washing of butter,—water from copper hydrants may become deleterious, unless the pipes be tinned inside.

It has long been known that the acids contained in greasy substances will act promptly on copper; but the above experiment has demonstrated to me, that butter is perhaps the most sensitive reagent to detect the presence of that metal, or of its salts, in a liquid; and that, if iron has the property of reducing the salts of copper contained in a very diluted solution, butter itself possesses the property of forming a copper salt—perhaps a butyrate—which reveals the presence of that metal, even when the active reagents most in use have failed to give traces of its existence.

I leave to the masters of the science the care of completing these experiments, which are certainly not devoid of interest in a toxicological point of view.

Translated for the *Philada. Journal of Pharmacy*, from *L'Union Pharmaceutique*, Paris.

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### CONVERSION OF SALT MEAT INTO FRESH; A FURTHER APPLICATION OF DIALYSIS.

By A. A. WHITE LAW.

As an appendix to the notice of my process for the utilization of brine [reprinted in this Journal, page 354.] I now beg to direct attention to a modification of that process, applicable to ships at sea, by which the quality of the meat supplied to the men may be much improved, and their food varied.

The salt meat is placed in a dialytic bag made of untanned skin, or other suitable material, and the bag filled nearly, but not quite, full of brine from the beef barrel. The dialyser is then placed in sea water, and the process allowed to go on for several days, till the meat and brine are sufficiently fresh for use, or till the brine in the dialytic bag is within 1° or 2° of Twaddell's hydrometer of the same strength of sea water. In this way, as the brine becomes free from salt, the beef, which, by the action of salt, has been contracted, gives its salt to the



brine in the bag, and so the process goes on, the beef expanding like a sponge, and gradually taking up a great part of the natural juice that it had previously lost in the salting process. In this way no loss of juice is sustained by steeping, and the brine left in the bags, after a nightly dialysis in fresh water, can be used for soup.

Thoroughly salted beef, without bone, takes up nearly one-third its weight of juice, and this absorption takes place gradually as the strength of the brine in the dialyser becomes reduced.

Meat thus treated—being, in fact, fresh meat—may be cooked in a variety of ways that are obviously not available for salt meat; and so the food of sailors, and, consequently, their health, may be improved —*Chem. News*, May, 28, 1864.

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#### FRENCH CEMENT.

This cement, composed of lime and india-rubber, is very valuable for mounting large microscopical preparations. The principal advantages are—that it never becomes perfectly hard, and thus permits considerable alteration to take place in the fluid contained in the cell without the entrance of air, and it adheres very intimately to glass, even if it be perfectly smooth and unground. If a glass cover is to be affixed to a large cell containing fluid, a small piece of the cement is taken between the finger and thumb and carefully rolled round until it can be drawn out into a thread about the eighth or tenth of an inch in thickness; this is applied to the top of the cell, before introducing any fluid, and slightly pressed down with the finger previously moistened. It adheres intimately. The preservative fluid with the preparation are now introduced, and the cell filled with fluid, which indeed is allowed to rise up slightly above the walls. The glass cover, rather smaller than the external dimensions of the cell, and slightly roughened at the edges, is to be gently breathed upon, and then one edge is applied to the cement, so that it may be allowed to fall gradually upon the surface of the fluid until it completely covers the cell, and a certain quantity of the superfluous liquid is pressed out. By the aid of

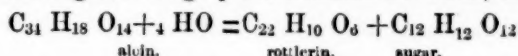
any pointed instrument a very little cement is removed from one part, so that more fluid may escape as the cover is pressed down gently into the cement. The pressure must be removed very gradually, or air will enter through the hole. A bubble of air entering in this manner may often be expelled again by pressure, or it may be driven out by forcing in more fluid through a very fine syringe at another part of the cell, but it is far better to prevent the entrance of air in the first instance. The edge of the glass cover being thoroughly embedded in the cement, the small hole is to be carefully plugged up by a small piece of cement, and the cell allowed to stand perfectly still for a short time, when it may be very gently wiped with a soft cloth. The edges of the cement may be smoothed by the application of a warm iron wire, and any superabundance removed with a sharp knife. A little Brunswick black or other liquid cement may be applied to the edges for the purpose of giving the whole a neater appearance. The cement is made as follows: A certain quantity of india-rubber scraps is carefully melted over a clear fire in a covered iron pot. When the mass is quite fluid, finely powdered lime, having been slacked by exposure to the air, is to be added by small quantities at a time, the mixture being well stirred. When moderately thick, it is removed from the fire and well beaten in a mortar, and moulded in the hands until of the consistence of putty. It may be colored by the addition of vermillion or other coloring matter. This cement answers well for fixing on the glass tops of large preparation jars, but if moderately strong spirit be used, a little air must be permitted to remain in the jar.—From "*How to Work with the Microscope*," by Lionel S. Beale and *Chem. News*, May 7, 1864.

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#### COLORS OF VEGETABLES.

Prof. Rochleder states that on comparing the properties of rottlerin with those of chrysophanic acid and of purpurin, a close resemblance becomes apparent, such as generally only takes place between consecutive members of a homologous series. The formulas of these bodies ( $C_{18}H_8O_6$  for purpurin,  $C_{20}H_8O_6$  for Chrysophan,  $C_{22}H_{10}O_5$  for rottlerin), likewise favor the assump-

tion that there exists some new relation between these coloring matters. The substance which Czumpelick obtained by the treatment of aloin with dilute acids concurs so closely in its properties with rottlerin, that there seems to exist little cause to doubt their identity. Stenhouse's formula for aloin is perfectly in accordance with the supposition that in being split it forms rottlerin and sugar, taking up the elements of water, viz.



In this connection, it is of interest to notice that the purgative principle of aloes contains a substance homologous with one of the proximate principles of rhubarb.—*Drug. Circ.*, from *Sitzungsber Akad. Wien. Bd. 47, Ch. Central bl.* 1863.

Translated for the Journal of the Franklin Institute.

#### ON THE PRESERVATION OF ANIMAL MATTERS IN THE OPEN AIR.

BY M. PAGLIARI.

I have the honor to communicate to the Academy (*of Sciences at Paris*), a new and very simple mode of preserving animal matter. The liquor which I employ for this purpose, is composed of alum, benzoin and water, and differs but little from my *hæmostatic water*. A single coat of this preserving liquid applied upon the substance which is then exposed to the open air, is sufficient to prevent its decay.—*Journal Franklin Institute*, April, 1864, from *Comptes Rendus*.

[Pagliari's hæmostatic water is made by boiling for six hours 8 ounces of Tincture of Benzoin (containing about 2 ounces of the Balsam) a pound of alum, and ten pounds of water, in a glazed earthen vessel, stirring constantly, and supplying the loss with hot water. The liquor is then strained and bottled.—*ED. AM. JOUR. PHARM.*]

#### GENUINE COLOGNE WATER.

One of the Farinas has published the following formula for this celebrated perfume, which we copy from the *Zeitschrift des Norddeutschen Apotheker-Vereins*:

R. Benzoini (purified) 2 ounces }  
 Ol. Lavandulæ 4 " } by weight.  
 Ol. Rosmarini 2 " }  
 Alcoholis fortioris 9 gallons. To this solution are added  
 successively :  
 Ol. Neroli,  
 Ol. " petits grains,  
 Ol. Limonis, of each 10 2·5 ounces,  
 Ol. Aurantii Dulcis,  
 Ol. Limettæ,  
 Ol. Bergamii, of each 20 4·5 ounces,  
 Tinct. Flor. geranii rosei q. s. Macerate for some weeks,  
 then fill into flasks.

## A NEW QUADRUPLÉ SALT.

By M. PELTZER.

By treating sulphate or acetate of copper by hyposulphite of soda there results, as is well known, a double sulphite, which has been studied by M. Lenz and M. Rammelsberg. This hyposulphite is soluble in ammonia, to which it imparts a blue color, and when left to itself the solution deposits a mass of blue crystals which constitute the new salt.

It may be obtained still more easily in the following manner: Divide into two equal parts a mixture of sulphate of copper; supersaturate one with ammonia and the other with hyposulphite of soda, and mix the two solutions; by shaking the mixture, the new product is deposited in a crystalline mass of a beautiful violet color.

The latter gives out a decided ammoniacal odor, especially if reduced to powder; it will bear a temperature of 100° C. Heated in a tube it loses no water, but forms a white sublimate which becomes orange by cooling. When boiled with water this sublimate emits ammonia, and on the addition of hydrochloric acid there follows a disengagement of sulphurous gas, which shows the sublimated product to contain M. II. Rose's sulphate—ammon.

Mixed with chlorate of potash, it denotates with some violence.

Water, especially when hot, decomposes but does not dissolve it; a green matter and white flakes of a salt of protoxide of copper are formed, and ammonia is disengaged; by prolonged boiling sulphide of copper is formed.

The new salt is soluble in ammonia, hyposulphite of soda, and acetic acid. Heated with potash it deposits at the boiling point a mixture formed of protoxide and deutoxide of copper.

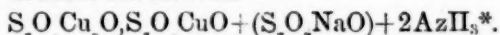
The solar rays decompose the acetic solution, hypochlorite of soda also destroys it, forming a white precipitate containing protoxide of copper and tetrathionic acid.

Nitrate of silver produces a white precipitate; the precipitate, however, soon disappears to give place to a green deposit soluble in ammonia, but easily giving a deposit of sulphide of silver. The deposit contains copper, silver, and hyposulphurous acid. The author is of opinion that iron, zinc, and silver may be substituted for copper; besides, ferruginous sulphate of copper gives a quadruple salt containing iron.

The author has found for the percentage composition of this salt—

$\text{Cu}_2\text{O}_2$	.	.	.	27.76
$\text{NaO}$	.	.	.	15.52
$\text{NH}_3$	.	.	.	8.52
$\text{S}_2\text{O}_2$	.	.	.	48.19

thence he deduces the formula—

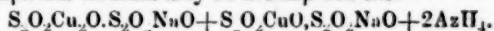


According to him ammonia here plays only a passive part, acting in the same way as water of crystallization.—*Chemical News, London, June 4, 1864, from Journal de Pharmacie et de Chemie.*

#### TO BLEACH GUTTA PERCHA.

Dissolve gutta percha (one part) in 20 parts of hot benzole, shake the solution with one-tenth part of freshly calcined

\* This empirical formula may be decomposed into—



which gives a quadruple salt differing from those already known only in containing three different bases and one acid.

plaster, and set aside, with occasional agitation, for two days. The clear pale brownish-yellow liquid is then decanted into another vessel containing double its bulk of alcohol fortius, when the gutta will be precipitated in the form of a brilliantly white tenacious mass, which is pounded together in a mortar, and rolled into cylindrical sticks.—*American Druggists' Circular.*

## Varieties

*Mummy Wheat.*—The 'Presse Scientifique des Deux Mondes' contains a description of a series of experiments made in Egypt by Figari Bey on the wheat found in the ancient sepulchres of that country. A long dispute occurred a few years ago, as to what truth their might be in the popular belief, according to which this ancient wheat will not only germinate after the lapse of three thousand years, but produce ears of extraordinary size and beauty. The question is undecided; but Figari-Bey's paper, addressed to the Egyptian Institute at Alexandria, contains some facts which appear much in favor of a negative solution. One kind of wheat which Figari-Bey employed for his experiments had been found in Upper Egypt, at the bottom of a tomb at Medinet-Aboo, by M. Schnepf, secretary to the Egyptian Institute. There were two varieties of it, both pertaining to those still cultivated in Egypt. The form of the grains had not changed; but their color, both without and within, had become reddish, as if they had been exposed to smoke. The specific weight was also the same, viz., twenty five grains to a gramme. On being ground they yield a good deal of flour, but are harder than common wheat, and not very friable; the color of the flour is somewhat lighter than that of the outer envelope. Its taste is bitter and bituminous; and when thrown into the fire, it emits a slight but pungent smell. On being sown in moist ground, under the usual pressure of the atmosphere, and at a temperature of 25° (Réaumur), the grains became soft, and swelled a little during the first four days; on the seventh day their tumefaction became more apparent, with an appearance of maceration and decomposition; and on the ninth day this decomposition was complete. No trace of germination could be discovered during all this time. Figari-Bey obtained similar negative results from grains of wheat found in other sepulchres, and also on barley proceeding from the same source; so that there is every reason to believe that the ears hitherto ostensibly obtained from mummy wheat proceed from grain accidentally contained in the mould into which the former was sown.—*Veterinarian, March, 1863.*



*Formation of Cell wall.*—Vegetable histology has attracted of late years considerable notice. Herr Schacht has been examining into the formation of the primordial utricle, with a view to discover what light they might throw upon the formation of the cell-wall. At an early stage in the development of the embryo, numerous currents were observed in the protoplasm, and afterwards a net work of threads of cellulose, corresponding to these currents, are found, resulting from the gradual change of the protoplasm itself; these continue to increase in thickness. This formation is considered analogous to that of the outer layer of the primordial utricle from the inner layer of the same: the various modifications are also explained by the supposition of the existence of currents. The gradual formation of cellulose threads in this matter is considered conclusive against the theory that the cellulose wall is a secretion of the primordial utricle.—*Lond. Chem. News*, April 9, 1864.

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*Preservation of Wood.*—The following composition is recommended to protect the bottom of posts, palings, and tubs set in the earth:—Forty parts of chalk are added to fifty parts of resin and four parts of linseed oil, melted together in an iron pot. One part of native oxide of copper is then added, and one part of sulphuric acid is cautiously stirred in. The mixture is applied hot with a strong brush, and forms, when dry, a varnish as hard as stone.—*Lond. Chem. News*, April 9, 1864, from *Neues Jahrb. fur Pharm.*, bd. xx., s. 235.

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*New Method of Coloring Woods.*—The surface to be colored is smeared with a strong solution of permanganate of potash, which is left on a longer or shorter time, according to the shade required. In most cases five minutes suffice. Cherry and pear-tree woods are most easily attacked, but a few experiments will serve to show the most favorable circumstances. The woody fibre decomposes the permanganate, precipitating protoxide of manganese, which is fixed in the fibre by the potash simultaneously set free. When the action is ended, the wood is carefully washed, dried, and afterwards oiled and polished in the ordinary way. The effect of this treatment on many woods is said to be surprising, particularly on cherry wood, to which a very beautiful reddish tone is communicated. The color is in all cases permanent in light and air.—*Lond. Chem. News*, April 23, 1864, from *Dr. Wiederhold, Neues Gewerb. fur Kurhessen*, 1863, s. 194.

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*Black Dye for Kid Gloves.*—Dissolve ten kil. of red chromate of potash in a sufficient quantity of hot water, and gradually add potash until the liquid no longer reddens litmus; then spread with a sponge, as a dye, this solution of chromate of potash on the skin. Besides this, there should

be prepared, in a copper cauldron, a dye composed of one kil. of rasped fustic, 75° kil. of fustic, one kil. of ground logwood, and three pail-ful of water; after being clarified this should be briskly boiled till there remains only two pailful of liquid, the rest being evaporated or absorbed by the wood. This dye is applied to the skin somewhat dried and mordanted with chromate of potash. The skin should be spread out on a table and left till it attains the proper medium of dryness. It is then coated with a solution of one kil. of Marseilles soap, thick enough to form a kind of jelly, with which is mixed 75° kil. of very pure colza oil, which should be so well incorporated as to have no drop of oil visible. This soap jelly frees the dyed skin from all humidity, and renders it supple, soft, and lustrous.—*Lond. Chem. News*, April 23, 1864, from *Moniteur Scientifique*, v. 847.

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## Editorial Department.

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MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, at Cincinnati. —By reference to the Almanac, it will be found that the third Wednesday in September is the 21st of that month, which is as late as it could happen, and three months from the time of this writing. Will not the members of the Association endeavor to make their arrangements so as to attend this meeting, and make it one of the largest and best we have had? All of us need some recreation, and many can afford the time and means to go as far as Cincinnati and shake hands with many brethren from the west, north west, and south west, for we trust there are many in Kentucky and Missouri who will make some endeavors to get to the meeting. Of the thirty seven queries to be answered at that meeting, only two have been taken by members west of the Alleghanies. This leaves a large margin for our Western friends to bring in volunteer papers; and as the interest of these meetings is greatly enhanced by the introduction of subjects inviting discussion, we hope they will bring forward topics interesting to us all, such as the grape culture in its relation to medicine in wine and tartar: the alcohol manufacture as an item of western production; the trade in indigenous drugs, and the sources for the supply of commerce, etc. We believe it is time the Association gave some attention to the statistics of Pharmacy, and it may well be thought of to take the subject in hand in relation to practitioners and assistants, druggists and apothecaries; the production and consumption of chemical drugs and medicines. Let us all set our faces in the direction of Cincinnati, and by a little extra exertion and management arrange our affairs so as to be in the Queen City of the West on the 21st of September, 1864.

**SOME PECULIARITIES OF THE BRITISH PHARMACOPŒIA.**—In our last number we noticed some points in this new work, and now propose to refer succinctly to some other preparations:—

*Ammonia Benzoes* made by direct combination with three fluidounces of solution of ammonia, two ounces of Benzoic acid, and eight fluidounces of distilled water. Evaporate and crystallize.

*Ammonia Phosphas* is directed to be made by saturating diluted phosphoric acid with solution of ammonia! Why so expensive a process should have been chosen we cannot divine. The usual process in this country is, to saturate super phosphate of lime obtained from bone ash, by the action of oil of vitriol, as in the process for phosphate of soda, with carbonate of ammonia (see page 10, vol. xviii. of this Journal). The same process is in the British Pharmacopœia for phosphate of soda.

*An inonium Sulphuratum* is made with liquor sodæ in place of liquor potassæ.

*Atropia* is made by the process of Mein, so far as the precipitation with carbonate of potassa, when the alkaloid is extracted by agitating the alkaline mixture with chloroform. The impure atropia obtained by evaporating the chloroform is purified by solution in spirit, digestion with animal charcoal, evaporating and crystallizing.

*Argent. oxidum* is prepared with lime water instead of potassa, seventy fluidounces to decompose half an ounce of nitrate of silver.

*Beberia sulphas* is made from Beberu bark, by a process analogous to that of sulphate of quinia, except that the product being uncrystallizable and extract like, is obtained in scales, by evaporation on glass plates.

*Digitalinum.* M. Henry's process is given for this substance.

*Emp. Saponis* is made by the following process:—Six ounces of powdered white Castile soap, one ounce of powdered resin, and thirty-six ounces of lead plaster are used. The first two ingredients are liquified (by heat?) and added to the plaster, previously melted; then, constantly stirring, evaporate to the proper consistence. Now, if heat alone is used to liquify the soap and resin, what is there to evaporate? If it is intended to add water, why is it not stated? This is certainly a defect in the process, except to adepts familiar with the preparation of this plaster.

*Extracts.*—A marked contrast between the manner of making these preparations in our own and the British Pharmacopœia, is apparent in the slight use of alcohol and of the process of percolation. *Extract of Chamomile* is made with water, adding fifteen minims of the volatile oil for a pound of the flowers, at the end of the process! *Extract of Columbo* is made by percolation with proof spirit. *Liquid Extract of Yellow Bark* is made by maceration and percolation with fifteen pints of water to one pound of bark, evaporated to three fluidounces, to which one ounce of alcohol is added for preservation.

*Liquid Extract of Ergot* is made by treating the ergot by percolation

with the ether, after agitating it with water, to remove the fixed oil, and then exhausting the residue with water, by digestion, at 160° F., heating the liquor to 212°, straining out the coagulum, and evaporating the liquor to nine fluidounces, and add eight fluidounces of alcohol, and filter. Our own process is greatly superior to this, and more ready of execution. *Liquid Extract of Opium* is a solution of an ounce of extract of opium in seventeen ounces of water, preserved by the addition of three ounces of alcohol. *Liquid Extract of Pareira* is made with water, an ounce to a fluidounce in strength, and preserved with three fluidounces of alcohol to the pint. Fluid Extract of Sarsaparilla is made in the same way.

Connected with the subject of extracts we offer a few remarks on—

*Percolation in Great Britain.*—Since the publication of the British Pharmacopœia, the pharmacutists have suddenly awoke to the importance of this process of solution. Did we not remember how it was in this country, about twenty years ago, when the Pharmacopœia of 1840 was published, we might almost smile at some of the remarks that are made about this now established process. In the British Pharmacopœia it has been introduced in the preparation of tinctures, but in such an imperfect manner as to detract considerably from its merit. In most of the cases the following manipulation is directed:—

*“Tinctura Aconiti. Tincture of Aconite.*

Take of Aconite root, in fine powder, two ounces and a half,

Rectified spirit a pint (twenty fluidounces),

Macerate the aconite root, for forty-eight hours, with fifteen ounces of the spirit, in a close vessel, agitating occasionally; then transfer to a percolator, and, when the fluid ceases to pass, pour into the percolator the remaining five ounces of the spirit. As soon as the percolation is completed, subject the contents of the percolator to pressure, filter the product, mix the liquids, and add sufficient rectified spirit to make one pint.”

The menstruum varies with the substance and the proportion of ingredients, but the state of division is sometimes in fine powder, sometimes “cut and bruised,” and often in coarse powder. The previous maceration and the use of the press, to get the portion of tincture absorbed, show either a lack of confidence in the process, or aims at saving the menstruum; nor has the process been adopted in many preparations, except the tinctures.

Since the publication of the Pharmacopœia, Mr. Haselden, Mr. Sanger, Mr. Deane and Prof. Redwood have written on the subject, various apparatus figured in the Pharmaceutical Journal, and Prof. Redwood, while stating the merits of percolation, evidently gives what he calls “the automatic process,” (the method known here as circulatory displacement, and which originated with Mr. Alsop’s Infusion mug in 1832, and afterwards employed for tinctures by Dr. Burton, of England, and known there as Burton’s method), the preference. Now, the difference between maceration at the top and bottom of the liquid is a very important one. We

entirely agree with Prof. Redwood as to the value of this method compared with ordinary maceration, but, when compared with percolation, it is far inferior, both as regards economy of time and readiness of execution, when the trouble of using the press and filter are kept in view. The great points in the process of percolation are familiarity with the proper fineness of powders, firmness of packing, and in proceeding at once, without maceration. The powders are more thoroughly exhausted, and there is less waste of the active matter of the drugs than by any other means. As regards the waste of menstruum at the last, it need not be, as the absorbed alcohol may be in great measure displaced by water, and the impure liquid thus obtained, mixed with other residues for precipitation, when they accumulate sufficiently. There are substances which will not admit of this percolation by water, where glutinous matter is present in quantity, but, where a conical percolator or a funnel is used, this objection, except in a few instances, is overcome. Until the recent war tax on alcohol has raised its price so greatly, the saving of the absorbed menstruum was not important, but now, economy in alcohol is as important to us as to our English brethren. The greatest defect in the mode of employing percolation in the British Pharmacopœia is the previous maceration in three-fourths of the menstruum. In our Pharmacopœia, the slight moistening of the powders is intended to favor the descent of the liquid by inviting it from particle to particle as well as to render packing more easy. When a liquid is poured upon a dry powder the enclosed air often opposes its descent, more especially if the liquid is aqueous. In concluding this notice, for the present, we cannot but admire the earnestness with which the English pharmacologists have taken hold of their Pharmacopœia, and speak out their views in regard to its imperfections. This honest criticism will do more to correct these faults and substitute better processes than any other means, and will, we hope, result in the next edition being the work of a joint commission of physicians and pharmaceutical chemists. The great point is now gained; having but one national Codex—on this as a basis, they may erect, by future revision, a work that will compare favorably with that of any country, whether viewed in relation to the comprehensive scope of its *Materia Medica*, the scientific construction of its formulæ, or the elegance and efficiency of its preparations.

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*Prospectus of the Forty-fourth Course of Instruction in the Philadelphia College of Pharmacy, to commence October, 1864, preceded by an Historical Sketch of the School. Philad., 1864, pp. 10.*

We are reminded by this pamphlet of the approach of the lecture season, and take this means of suggesting that all those of our readers or their friends, who may desire to attend a course of instruction in this College, or who may wish information about it, can have a copy sent to

them by addressing a note to the Editor of this Journal, stating the address to which it is to be sent. A complete Catalogue of the Graduates, from the beginning of the School to the present time, is appended. Our readers are also referred to the advertising sheet of this number for information on the same subject.

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*New York Medical Independent* is the name of a new weekly medical Journal, commencing May 4, 1864,—16 pages in each number, issuing in our sister city. The special Editor is not announced, but the Editorial labors are referred to "The New York Medical Literary Association," and it is published by T. B. Harrison & Co., 447 Broome Street, New York. It claims to have a "Pharmaceutical department" under the charge of a competent Editor. We like to see a tangible Editor or Editors to a journal, yet it does not necessarily follow that anonymous labor is not well done. As regards the Pharmaceutical department, there is ample room for its active employment, and we hope to see it teem with valuable hints and comments on legitimate pharmaceutical topics.

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*The Union Monthly and Journal of Health and Education, devoted to the Union of the Nation, National Education, and the Temporal and Spiritual welfare of the Army.* Wm. M. Cornell, M.D. L.L.D., Editor. Philad. 1864, pp. 24.

Two numbers of the above journal have been received; it appears to be more political than medical in its character.

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#### OBITUARY.

HEINRICH ROSE, the illustrious chemist, died at Berlin, on the 28th of January, at the age of 69 years, having filled the chair of Chemistry in the University of Berlin for more than forty years. He was a pupil of Berzelius, at Stockholm, in 1819. His treatise on Analytical Chemistry has been translated into French and English, and for a long time was almost our sole authority. *Poggendorff's Annalen* contained nearly all his papers, and scarcely a volume of that important journal for forty years past is without contributions from his pen. Rose was in private life one of the most gentle and excellent of men. Taus in two months has the University of Berlin lost two of her most illustrious men, Mitscherlich and H. Rose.—*Silliman's Journal*.